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PARIS, J.A



Edward Morehead Wood

April 3<sup>rd</sup> 1850







**PHILOSOPHY IN SPORT.**

**VOL. II.**



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'Tis not enough that Greek and Roman page,  
At stated hours, the sprightly boy engage ;  
Ev'n in his pastimes he requires a friend,  
To warn, and teach him safely to unbend ;  
And levying thus, and with an easy sway,  
A tax of profit from his very play,  
T' impress a value, not to be eras'd,  
On moments, squander'd else, and running all to waste.

COWPER's *Tirocinium*.

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New-Street-Square.



# PHILOSOPHY IN SPORT

MADE

SCIENCE IN EARNEST;

BEING

AN ATTEMPT TO ILLUSTRATE THE FIRST PRINCIPLES  
OF NATURAL PHILOSOPHY

BY THE AID OF

POPULAR TOYS AND SPORTS.



IN THREE VOLUMES.

VOL. II.

LONDON:

PRINTED FOR

LONGMAN, REES, ORME, BROWN, AND GREEN,  
PATERNOSTER-ROW.

1827.



PHILOSOPHY

1871

SCIENCE IN NATURE

1871

AN ATTEMPT TO RECONCILE THE TWO PRINCIPLES

OF NATURAL PHILOSOPHY

BY THE REV. J. H. W. L.

PHILOSOPHY



IN THREE VOLUMES

VOL. II

LONDON

1871

PRINTED BY J. H. W. L.

1871



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## CHAPTER I.

MARBLES.—ANTIQUITY OF THE GAME.—METHOD OF MANUFACTURING THEM.—RING-TAW.—MR. SEYMOUR, THE VICAR, AND TOM ENTER THE LISTS.—THE DEFEAT OF THE TWO FORMER COMBATANTS; THE TRIUMPH OF THE LATTER.—A PHILOSOPHICAL EXPLANATION OF THE SEVERAL MOVEMENTS.—THE SUBJECT OF REFLECTED MOTION ILLUSTRATED.—THE VICAR'S APOLOGY, OF WHICH MANY GRAVE PERSONAGES WILL APPROVE.—AN IMPORTANT STEP TAKEN BY MAJOR SNAPWELL.

A CONSIDERABLE interval had elapsed between the departure and return of Mr. Seymour and Major Snapwell. Nothing, however, of any

peculiar interest had occurred during their absence, if we except the receipt of another letter from Miss Villers, appointing a day for her arrival at Overton, and the return of Miss Kitty Ryland from London. Tom's holidays were on the wane, and his father was anxious that they should conclude the history of the more popular sports before their expiration; he had, therefore, requested the attendance of the vicar on the morning after his return; the appointed hour, however, had long passed by, without the appearance of the reverend gentleman.

"What can have become of the vicar?" said Tom, as the children were preparing for their philosophic lesson.

"I fear, my dear," replied Mr. Seymour, "that Major Snapwell is likely, in future, to allure him from the lodge; and we ought not to feel offended at his absence, for there is something so fascinating in the society of those who are engaged in similar pursuits with ourselves, that a man must be a Stoic who can resist it."

"Notwithstanding which," said Tom, "I feel assured that he will pay us a visit in the course of the morning."

"Probably, my dear: but, in the mean time,



we will take into consideration some points which are essentially connected with the games of marbles and ball, viz. the *Collision of Bodies*."

Mr. Seymour then proceeded to demonstrate the several propositions which this subject embraces, but, as they are fully explained in the elementary treatises on mechanics; we do not consider it necessary to enter into their consideration in the present chapter, although the reader will find some notices respecting them in an additional note, appended to the last volume. (1)

The discussion upon this subject had been concluded; the children were engaged in their diversions on the lawn, and Tom was displaying to his sisters many instances of his adroitness and skill in shooting at and hitting marbles, when their father, accompanied by the vicar, who had just arrived, rejoined them.

"Why, Tom!" exclaimed Mr. Seymour, "how came you possessed of such a multitude of marbles?"

"By luck; good luck, papa; I won them all before the holidays; and I can assure you

that my schoolfellows acknowledge me as one of the best players at *ring-taw* in the school."

"Justly, then, has your merit been rewarded," cried the vicar. "Have you not read of the skilful Roman who could blow peas through a quill, and deposit them with such nicety on the point of a pin, placed at some distance, as rarely to miss his aim?"

"And what was his reward?" asked Tom.

"A bushel of peas, my boy, which the emperor commanded to be presented to him. But do not misunderstand me, far be it from my wish to disparage your skill; whatever we undertake, we should endeavour to accomplish; I am, therefore, well pleased to find that you can play at marbles with so much success."

"I wonder, papa, who invented marbles?" said Tom.

"That question, my dear, must be addressed to Mr. Twaddleton, who, I have no doubt, will readily answer it."

"Not so readily as you may imagine," replied the vicar; "but I will tell you all I know upon the subject. It appears to be a very ancient game; for it is stated by Suetonius, that Augustus, when a youth, spent many hours in

the day in playing, with little Moorish boys, ‘*cum nucibus*,’ that is *with nuts*, which appear to have been then used in the very way in which you now play with your marbles. In later times, round stones picked out of gravel, were introduced for this purpose. The marbles which you now hold in your hand are substitutes of still more modern invention. The best of them are imported from Holland, where, as I have been informed, they are manufactured, by grinding fragments of alabaster and of other stones, in an iron mill of a peculiar construction, in which there are several partitions furnished with rasps, which turn with great velocity, by means of a stream of water; and thus having rounded the stones, project them out of different holes for which their size may adapt them. Thus manufactured, they are brought down the Rhine, and from thence dispersed throughout Europe. There are, however, as you well know, inferior kinds, which are of home manufacture, and consist of baked clay, or vitrified earth.”

“Now then,” said Mr. Seymour, “for a game; what is it to be, Tom?”



“ *Ring-taw* for ever,” cried Tom ; “ it is the only game of marbles worthy of being played.”

“ It is really so long since I left school,” observed his father, “ that I must beg you to refresh my memory, and give me some instructions about this favourite game of yours.”

“ I will tell you all about it. We must first draw a circle, on which each player is to put a certain number of marbles to be previously agreed upon ; we then make a mark at some distance, which is called the *offing*, and from which we are to shoot at the marbles in the ring.”

“ That is all very intelligible,” observed his father ; “ and I suppose the object of the player is to shoot a marble out of the ring, which not only gives him that marble, but entitles him to shoot again at another, and so on, until he misses, or all the marbles are won.”

“ That is right, papa.”

“ And a good marksman,” observed the vicar, “ who has the first shot, may easily win the game, before any other player can gain the opportunity of shooting at a single marble.”

“ I see that clearly,” said Mr. Seymour ; “ he may strike out a marble from the circle, and

then shoot at another, and in this manner traverse the whole ring; I therefore conclude, that good players will always demand a large ring, or else there would not be much chance for any one, except for him who played first."

"That is the game; but I must tell you," said Tom, "that if the player should leave his own marble in the ring, he is at once put out; and should it be within a certain distance on the outside, an adversary may shoot at it, and by hitting it, put him also out of the game."

"I believe that I am now a perfect master of the subject," said Mr. Seymour; "what say you, vicar?"

"I understand it; and it appears to me to be capable of some scientific calculation; but the practical results must, of course, differ very widely from the theory, for the unevenness of the ground, and the inaccurate construction of the marble, are circumstances which never can be duly estimated."

"Certainly not," replied Mr. Seymour; "these difficulties even exist at the game of billiards, where the table is smooth and perfectly horizontal: but we do not require perfect accuracy, an approximation to it will be sufficient for the

purposes of illustration ; we will, therefore, if you please, proceed at once to the game, and I will endeavour to point out to Tom the nature and direction of the several forces by which each marble will be influenced."

Tom, accordingly, like the son of Cornelius Scriblerus, converted his legs into a pair of compasses, and described, with the toe of his shoe, the necessary circle upon the ground. Each party, by agreement, placed two marbles upon the ring, and it fell to the lot of the vicar to open the campaign. Mr. Twaddleton then advanced, and with the assumed air of a true knight-errant, approached the ring, exclaiming with a loud voice, and with a gesture of inexpressible drollery, " I demand gracious leave that I may be delivered of my vow, and forthwith combat in the lists ;" so saying, he unfurled his red banner, and sounded a trumpet ; or in more humble phraseology, he extracted his handkerchief from his pocket, and applying it to his nasal organs, produced a loud and thrilling blast, which frightened every sparrow from its resting place. After this preliminary ceremonial, he marshalled his limbs into the most appropriate attitude, and thrusting one hand



behind the exuberant tail of his coat, he, with the other, shot forth his missile at the largest marble opposite to him. His *taw* faithfully delivered its errand, and inflicted such a blow upon the paunch of his antagonist, that, although nearly twice the size of its assailant, like a true bully, it skulked off, and retreated several feet beyond the lists: but, alas! the little marble of the vicar, unlucky wight! was so stunned by the operation, that it staggered, and reeled backwards into the ring, and thus, according to the established law of the field, completed by one act the total defeat of its luckless commander.

“Your marble is left in the ring!” exclaimed Tom, with a shout of triumph.

“I see how it happened,” said Mr. Seymour, “the vicar struck the marble plump, or ‘played a full ball,’ as we say at billiards, and the result easily admits of explanation. You already know that a marble possesses elasticity; when, therefore, the one in the ring was struck, it went off with a velocity equal to that with which the striking marble approached it, while the latter, in return, received a blow equal to that it gave, which destroyed its motion. When we go back

into the library, I will exhibit a very pretty experiment in farther elucidation of this philosophical truth."

It was now Mr. Seymour's turn to enter the lists. He carefully applied his knuckles to the ground, and taking aim at a little marble which he had selected as his victim, gallantly shot the missile from his thumb and finger; but, alas! alas! the goddess, whatever may be her name, who presides over this species of tournay, doubtless saw the impending fate of her favourite, and, after the example of Venus, who turned aside the weapon from Æneas, assumed the shape of a small pebble, and thus arrested the fatal course of the marble, and gave it a new direction, which sent it curvetting through the ring, without committing one single act of devastation.

"Bravo! bravo!" exclaimed Tom, "it is now my turn."

The boy, according to the usage of the field, might, at once, have won the game by striking his father's marble; but he was too magnanimous to take such an advantage, and too eager to display his own skill, to cut the game short by a manœuvre; he had determined to win his laurels by hard fighting and generalship. He,

accordingly, proceeded to strike a ring marble ; in effecting which, he had, like the vicar, challenged a *gigantic knight* as his antagonist, but, instead of striking it *plump*, he struck its upper quarter, so that it was rolled out of the ring, while the striking marble, imparting only a portion of its momentum, continued to move forward after the impact. This course was greeted with the acclamations of Mr. Seymour and the vicar, the latter of whom declared it to have been “nobly run,” and gallantly accomplished ; and extracting a sixpence from his waistcoat pocket, exclaimed, after the manner of chivalry, “*Largesse, largesse*, glory to the sons of the brave ! glory to the invincible knight of the taw !”

The boy had not only struck the marble out of the ring, but he had, at the same time, contrived to place his own marble in the most favourable position for his future operations ; and, indeed, it may be here observed, that in this consists the art of playing the game. It is almost unnecessary to add that Tom won every marble in succession.

Mr. Seymour then proceeded to explain the laws of impact, by which the movement of each marble was directed. He observed, that the



subject embraced two propositions, viz. the direction of the *object* marble, after having been struck, and that of the *striking* marble, after the stroke. He said that, if a straight line were drawn between the centres of the striking and object marbles, it would necessarily pass through their point of contact, and, if continued, would represent the path of the latter after the blow. In order to find the direction of the *striking* marble, after the shock, he told him that he must imagine a tangent to the path of the *object* ball drawn from its centre, and then a line parallel to it, from the centre of the striking marble; the latter of which would be the required path.

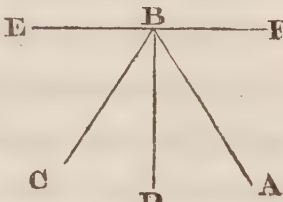
Mr. Seymour now enquired whether there was any other game of marbles at which they could amuse themselves.

“The game which we call *lagging out*,” replied the boy, “is amusing enough. It consists in striking your marble against the wall, and making it rebound, so as to hit any other marble that is placed at a certain distance from it, or to come within a span of it.”

“I understand,” said his father; “and, like *ring-taw*, it may be made subservient to our

purpose of illustrating the doctrine of forces; although I think that the principle of *reflected motion* may be more readily explained by the rebounding ball."

Mr. Seymour here took the elastic ball, and threw it obliquely against the wall, from which it rebounded in an opposite and equally oblique direction. He then sketched the annexed figure, and proceeded as follows:

"When I threw the ball  B, in the direction A B, having struck it, it glanced off, making an angle in its passage back again, equal to that which it made on its approach to the wall. If I draw the perpendicular B D, this fact will be rendered more apparent, and you will perceive that the angle A B D is equal to the angle C B D: the former is termed the *angle of incidence*, the latter, the *angle of reflection*; and these angles, remember, are always equal, provided the ball under experiment be perfectly elastic."

"Do you mean to say," asked Tom, "that the more obliquely I throw the ball against the wall, the more obliquely it will rebound?"

“ Exactly; that is my meaning: and see whether you cannot explain the fact, for it depends upon the composition and resolution of forces, a subject which I should hope you thoroughly understand.”

Tom pondered for some time over the drawing, and at length observed, that there was one difficulty which he could not immediately surmount.

“ State your difficulty,” said Mr. Seymour.

He proceeded to observe, that the force, acting in the direction  $AB$ , would certainly be resolved into two others, viz. one in the direction  $FB$ , and another in that of  $DB$ ; because,” continued he, “ these lines are the adjacent sides of the parallelogram, of which  $AB$  is the diagonal; and I well know that whenever a force strikes obliquely it is thus resolved.”

“ That is all very well explained,” replied his father; “ pray proceed.”

“ Now comes the difficulty,” continued Tom; “ for the force  $DB$  will of course be destroyed by the wall, and that represented by  $FB$ , which is the only one that can remain, would carry the ball to  $E$ .”

“ It certainly would do so,” answered his



father, "if the ball were perfectly devoid of elasticity; but remember that, in consequence of this property, the force  $DB$  will be exchanged for one in an opposite direction  $BD$ ."

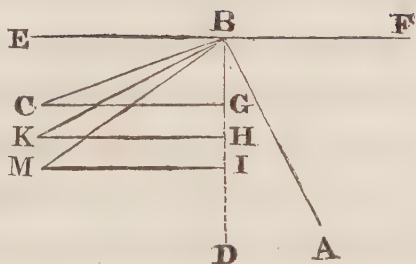
"I had entirely overlooked the elasticity," said Tom; "I now see my way clearly, for in that case, there must be two forces acting in the directions  $BD$ ,  $BE$ , which will, of course, drive the ball down the diagonal  $BC$ ."

"Your demonstration is perfectly correct, my boy; and I think you will now admit that I could not have adduced a more beautiful instance of the composition and resolution of forces; for, in the first place, you resolve the diagonal force into two others, and then you recompound these again to produce another diagonal one."

"But I think you told us that the angles of incidence and reflection were only equal when the rebounding body was perfectly elastic."

"Clearly so; the force  $DB$  must be exchanged for an equal one  $BD$ , or else the angle  $ABD$  cannot be equal to the angle  $DBC$ ; but I will render this fact still farther intelligible by another diagram. Let  $B$ , as in the former

case, represent the wall, upon which the imperfectly elastic body impinges in the direction  $A B$ . The force will of course be resolved into two



others, viz. into  $D B$  and  $F B$ ; the force  $D B$ , however, instead of being replaced by the opposite one  $B D$ , will now be represented by the shorter line  $B G$ ; or that of  $B H$  or  $B I$ , according to the degree of elasticity. If we, therefore, complete the parallelogram,  $B C$ ,  $B K$  or  $B M$  will be the diagonal path of the body; making, as you perceive, the *angle of reflection*  $D B C$ , greater than that of *incidence*  $A B D$ : and where the body is perfectly inelastic, the force  $D B$  will be wholly destroyed, and, the force  $B E$  alone surviving, the body will be carried along the line  $B E$ . I have now," continued Mr. Seymour, "explained to you the principal laws which govern those forces by which your ball or marbles are actuated. It is true that in practice you cannot expect the results should accurately coincide with the theory, because, in the first place, you cannot

obtain marbles that are of equal density and elasticity, and of true figure ; and, in the next, there will be obstacles against which it is impossible to guard. The spinning of the marble will also have a material influence on its motion, as we have already discovered. In the game of billiards, where every obstacle is removed, as far as art can assist, the theory and practice are often strangely discordant. But we have dwelt sufficiently upon the subject ; we will, therefore, return to the library, where I intend to exhibit an experiment in farther elucidation of the subject of collision.”

The party accordingly proceeded on their return.

“ I hope,” said Mr. Seymour, addressing himself to Mr. Twaddleton, who was walking a few paces before him, “ that the maiden ladies have not espied their vicar at a game of marbles ; if they should, what a chuckling would there be at their next tea party ! ”

“ A fig for the spinsters,” exclaimed the vicar, as he hastily turned round, and arrested the progress of the party by his gesture. “ You really speak, Mr. Seymour, as though it were derogatory to my character to descend from the more austere pursuits to the simple but innocent



amusements of youth. Let me remind you, sir, that the Persian ambassadors found Agesilaus, the Lacedæmonian monarch, riding on a stick."

"True," replied Mr. Seymour; "and the ambassadors found Henry the Fourth playing on the carpet with his children; and it is said, that Domitian, after he had possessed himself of the Roman empire, amused himself by catching flies; but these were kings: now I admit that philosophers are monarchs, but monarchs are not always philosophers; you must, therefore, produce some less objectionable authority, if you stand in need of such a sanction. Let me see whether I cannot assist you; there was Socrates, if tradition speaks truly, who was partial to the recreation of riding on a wooden horse, for which, as Valerius Maximus tells us, his pupil Alcibiades laughed at him."

"I care not who laughs at me," exclaimed the vicar; "I enjoy the amusements of youth, and agree with Dr. Paley, in regarding the pleasure which they are made to afford, as a striking instance of the beneficence of the Deity; and should you so far relax as to put your plan into execution, of writing a work upon juvenile sports, I hope you will call upon me to compose a eulogy, by way of preface."

“ I shall not forget your offer, depend upon it.”

“ Did not Archytas,” resumed the vicar,

“ ‘He who would scan the earth, and ocean’s bound,  
And tell the countless sands that strew the shore,’

as Horace says, invent the children’s rattle?—  
Toys, my dear sir, have served to unbend the  
wise, to occupy the idle, to exercise the se-  
dentary, to moralise the dissipated,” —

“ And,” interrupted Mr. Seymour, “to in-  
struct the ignorant.”

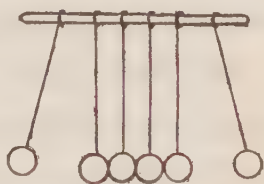
“ I will also convince you,” continued the  
vicar, “ that the tournaments were indebted for  
their origin to the Troy game (*ludus Trojæ*),  
first introduced into Italy by young Ascanius.”

The foregoing episode having been concluded,  
the party proceeded, without any farther inter-  
ruption, to the lodge. On their arrival, Mr.  
Seymour produced a piece of apparatus, for the  
purpose of exhibiting the experiment he had  
promised, in illustration of the doctrine of the  
Collision of Elastic Bodies.

“ Here are two ivory balls,” said  
he, “suspended by threads; I shall  
draw one of them, A, a little on one  
side; now, I let it go, it strikes, you



see, against the other ball, B, and drives it off to a distance equal to that through which the first ball fell; but the motion of A is stopped, because, when it struck B, it received in return a blow equal to that it gave, and its motion was consequently destroyed. To extend the experiment, here are six ivory balls hanging in a row; I will draw the first out of the perpendicular, and let it fall against the second; see! see! none of the balls appear to move, except the last, which you perceive flies off as far as the first ball fell. I should like to hear you explain this."



"Tom observed, that when the first ball struck the second, it received a blow, in return, which destroyed its motion; and that the second ball, although it did not appear to move, must have struck against the third, the re-action of which set it at rest; that the action of the third ball must have been destroyed by the re-action of the fourth, and so on, until motion was communicated to the last ball, which not being re-acted upon flew off."

Mr. Seymour commended Tom for his explanation; but he begged him to understand



that such an effect only occurred when the balls were elastic, and he proceeded to exhibit the difference between elastic and inelastic bodies by another experiment. “When you raise one of these inelastic balls, made of clay, out of the perpendicular, and let it fall against the other, E, the action and reaction, not being augmented by the force of elasticity, are insufficient to destroy the motion of the former; only part of the motion D will, therefore, be communicated to E, and the two balls will move together to *d e*, which are less distant from the vertical line than the ball D was before it fell.”



As the scientific materials of the present chapter are not sufficiently ductile to admit of farther extension, we shall, with your kind permission, gentle reader, avail ourselves of so favourable an opportunity to relate the circumstances which attended the return of Miss Kitty Ryland. Her worthy friends, the Misses Noo-  
dleton, Puttle, and Tapps, assembled around the tea-table with that vigorous appetite for news, which ten days of starvation, or, to say the least, of meagre diet, must necessarily have created; and it must be allowed, that the his-

tory of Miss Kitty's journey, and of the incidents which accompanied it, were calculated to afford a repast which less refined and voracious epicures might have anticipated with satisfaction. Miss Ryland was fully prepared for the ordeal to which her return exposed her; and she had determined to state, without entering into any particulars, that the sole object of her journey to London had been to invest certain property in eligible securities; but the settled gloom that shaded her brow told a tale which all her address was incapable of concealing.

"I fear that something unpleasant has occurred during your trip," said Miss Puttle, as she fixed her small sharp eyes upon the countenance of our heroine.

"Unpleasant — oh dear, no; — what can possibly have put that into your head? I never spent a more delightful week in my life, save and excepting, indeed, the inconveniences which attended the excessive heat of Bond Street, and the clouds of dust which poison the inhabitants, since the streets have been *muck*-adamised: but these were trifling troubles, as I succeeded in the main object of my visit; and I can assure you, ladies, that if you will follow

my advice, you may readily double your present incomes, as I have done."

"There, now; — well, I declare, — did not I say that Miss Ryland had met with a prize in the lottery, or some such good luck?" cried Miss Noodleton; and turning towards her fortunate companion, she said, in a tone of tender solicitation, "Can my dear Miss Kitty forgive a little curiosity — innocent curiosity? I dropped in, this morning, while you were in the village, and observing your trunk gasping, as it were, for a little fresh air, I just threw up the lid, when a profusion of new purchases saluted my eyes; 'So,' said I, to Miss Puttle, who happened to pop in at this very moment, 'our friend here must have found a gold mine.' Now, were not these the exact words I used, Miss Puttle?"

"They were," answered the lady; "and I think you added, that you should not be surprised if a wedding were shortly to take place, as the ribands and gloves wore an ominous appearance."

"I am delighted," cried Miss Phillis Tapps; "you are sly, methinks, Miss Kitty; come, come, tell us the name of the happy swain, and let your friends participate in your felicity."

This was a home thrust, and Miss Ryland was not exactly prepared to parry it. She hesitated for a few moments, and disguising her agitation, as well as she was able, was about to vent her indignation, when a brilliant thought darted like lightning through her brain, and immediately relieved her from the embarrassment. Its announcement, thought she, will remove every suspicion from myself, while its execution will plunge both the vicar and major into trouble. This, and much more, passed through the worthy spinster's head, in less time than that which we have required for the relation of it; and she at once decided upon a plan, so well calculated to clear off the long score of petty spites which had been accumulating on the tablet of her memory.

“ Upon my word, ladies, your sagacity delights me; and so, because, forsooth, I brought home a few white ribands, and half a dozen pair of soiled kid gloves, which my good friend Mrs. Tenterhook let me have at half price, you, at once, conclude that a wedding must be about to happen: but, joking apart, you are right, you have guessed it; but it is a secret: if I intrust it to you, I shall expect your promise to be silent.”



“ *Mum*,” cried Miss Noodleton, as she placed her fore finger upon her under lip, to which she had given a significant curl, which imparted to it the resemblance of a piece of dog’s-eared parchment.

“ *Mum* is the word,” repeated the ladies ; “ you may depend upon our fidelity.”

“ I am satisfied,” replied Miss Ryland. “ You must know, then, that the bridal favours which have excited your curiosity are intended as a present to Annette, who, I have good reasons for knowing, is to be shortly led to the altar by Major Snapwell’s valet, Jacob.”

“ Bless me ! What news ! Who would have thought it ? ” exclaimed they in the secret.

We will not tyrannise too long over the patience of the reader ; we shall, therefore, conclude our chapter by stating, that Miss Kitty lost no time in seeking an interview with the parties in question, in order to put matters in a proper train ; and the reader may, probably, hereafter learn, that the fire, which threatened to scorch the fair fame of our heroine, was adroitly applied to light up a flame, which, under other circumstances, might never have been kindled.



## CHAP. II.

THE SUCKER.—COHESIVE ATTRACTION.—PRESSURE OF THE ATMOSPHERE. — MEANING OF THE TERM SUCTION. — CERTAIN ANIMALS ATTACH THEMSELVES TO ROCKS BY A CONTRIVANCE ANALOGOUS TO THE SUCKER. — THE LIMPET. — THE WALRUS.—LOCOMOTIVE ORGANS OF THE HOUSEFLY.—A TERRIBLE ACCIDENT.—A SCENE IN THE VILLAGE, IN WHICH DR.DOSEALL FIGURES AS A PRINCIPAL PERFORMER. — THE DENSITY OF THE ATMOSPHERE AT DIFFERENT ALTITUDES.—THE POP-GUN. — THE AIR-GUN.

“WE will now proceed,” said Mr. Seymour, “to consider the action of those toys which are indebted for their operation to the force of

the atmosphere. — Tom, fetch your leathern sucker.”

“John is, at this moment, amusing himself in the garden with the one which I brought with me from school,” replied Tom.

“Then you shall construct another for yourself. Here is leather and string.”

“This leather is too stiff; but I may, perhaps, make it answer the purpose by first soaking it.”

Having allowed it to remain in water for a short time, the leather became sufficiently pliable for his purpose; he therefore cut it into a circular shape, and affixed a string through its centre. The juvenile party now hastened to the lawn, and having once again dipped his newly constructed sucker into the water, the ingenious boy placed it upon a stone, pressed down the leather with his foot, and succeeded in making it raise the weight.

“Well done, my boy. Now, then, explain the reason of the leather’s adhesion to the surface, and of its being thus capable of retaining its hold, notwithstanding the gravity of the stone.”

“In the first place,” answered Tom, “the

edges of the wet leather, from being closely pressed, stuck with sufficient firmness to the smooth surface of the stone, to resist the force of the string, as I pulled it upwards; the consequence was, that a hollow was formed in the middle part of the leather; and, as that hollow place cannot contain any air, it is called a *vacuum*."

"Very well," replied his father, "so far you are right; but you have not informed me in what manner a *vacuum* acts, in preventing the stone from quitting the leather."

"It makes it adhere to it by some kind of *suction*, but I confess that I do not exactly understand the subject."

"Then let us proceed cautiously and deliberately in the explanation. In the first place, you have said, and said correctly, that the edges of the leather adhere to the stone; but what is the nature of the power to which this adhesion is to be referred? I perceive you are puzzled by the question; attend, then, to my explanation: you must know that there exists a tendency in all bodies to adhere together, provided the contact of their surfaces be sufficiently perfect; this property is termed *cohesion*, or



cohesive attraction, from the Latin word *cohæreo*, which I need not inform you signifies to *stick together*. The dry leather will not adhere to a smooth surface, because, in that case, the contact cannot be rendered sufficiently perfect; but, when saturated with water, the interstices of the leather are filled with that fluid, and the inequalities of the surface, which must always prevent close contact, are removed. If two bodies, when placed together, be not sufficiently smooth, or polished, it will be vain to make any attempt to produce their cohesion; since the particles will, in such a state, touch each other only in a few points; it is for this reason that carpenters, when they intend to glue pieces of wood together, plane the surfaces perfectly smooth, before they apply the glue."

Tom here acknowledged that he had not before understood the reason of the leather's adhesion to the stone,

"Having then settled this point to your satisfaction," continued Mr. Seymour, "let us proceed. Your idea of a *vacuum* being formed in the hollow part of the leather is perfectly correct: for, as you draw up the central part

by the string, the hollow thus produced must necessarily be a *vacuum*, since the air cannot pass through the leather to supply it; in this state, therefore, the atmosphere presses upon the exterior of the leather, and like any other weight prevents its rising from the stone."

Fanny and Louisa here expressed some surprise on hearing of the weight of the atmosphere; the former observed, that she did not feel any pressure from it. Their father explained the reason of their not being conscious of the weight, by informing them that their bodies contained air, which, by its elasticity, counteracted the pressure from without; but that, if it were possible to remove all the air which the body contained, the pressure of the atmosphere would not be counteracted; and the consequence would be, that we should be crushed to atoms by its weight, which had been ascertained by experiment to be equal to fifteen pounds upon every square inch of surface, or, as much as forty thousand pounds upon the body of a man of ordinary size.

"Until your explanation," said Tom, "I really believed that the leather adhered to the stone by some kind of *suction*, just as the back

of my hand adheres to my lips, whenever I place it to my mouth, and draw in my breath."

Mr. Seymour here expressed a doubt whether his son was even yet a perfect master of the subject: he told him that there was no such operation in nature as *suction*; that it was merely a popular term to denote the action of the air upon a vacuum. "Your hand," said he, "adheres to your mouth, in consequence of your forming a vacuum within it, by forcibly drawing in your breath, and the resistance which is opposed to its removal, arises entirely from the pressure of the atmosphere upon it. Many are the effects which may be explained upon a similar principle. I dare say you well remember the astonishment which you expressed at the force with which the limpets attached themselves to the rocks."

"O yes, papa," exclaimed Louisa, "I well remember, when we walked on the sea-shore, that, on first touching the limpets, they appeared loose and moveable, but before I had time to remove them, they fastened themselves as firmly as though they had been a part of the rock upon which they were fixed; how could that happen?"

Mr. Seymour replied that these sea-insects possessed the power of converting their whole bodies into *suckers*; and he informed them, that many other animals were endowed with a similar faculty. He instanced the claws of the polypus, which are furnished with many such suckers, by means of which the animal is enabled to hold to whatever it attaches itself with very considerable force.

“ Have you never observed,” asked Mr. Seymour, “ the security and ease with which flies frequently walk upon a smooth wall, or a pane of glass, or even along the ceiling, with their bodies downward ?”

“ To be sure,” replied Tom; “ but are not their legs provided with some sticky matter, which enables them to preserve themselves from falling ?”

“ That is a popular error, my dear; the fact is, that their feet are provided with little cups, or suckers, which they alternately exhaust and fill with air; by which means they are enabled to walk in every position, over the most slippery surfaces. (2) In like manner, the walrus, or seal, a painting of which you may remember to have seen in the Panorama of Spitzbergen, is



capable of climbing the masses of slippery ice with perfect security."

At this moment, Tom's stone fell from the sucker. Louisa enquired how it could have happened.

"The circumstance is to be easily explained," said her father. "The atmosphere, by its pressure, ultimately forced its way through the edges of the sucker; its interior, therefore, became filled with air, and it consequently balanced the external weight, which had before confined it."

"I think," said the vicar, "that Tom must now surely understand the theory of the leathern sucker; what say you, my boy? Cannot you exclaim with Persius, '*Intus et in cute novi.*'"

"Which I suppose," observed Mr. Seymour, "you would construe, 'Well do I know the nature of the *cavity*, and the operation of the *leather.*'"

"Exactly," answered the vicar.

"Then never more protest against the vice of punning, for a more atrocious specimen of the *lusus verborum* was never sported by the most incorrigible Johnian: but, to your classical

fancy, any object enclosed in a Latin shrine appears as a deity."

The vicar had just drawn up his person into a suitable attitude for combat, and would, no doubt, have defended himself against this unexpected attack with his usual address, had not a circumstance occurred, which put an abrupt termination to the discourse.

"See! see!" exclaimed Louisa; "what can have happened? There is Jerry Styles, with a crowd of villagers, running towards us in the greatest state of agitation and alarm."

"Jerry Styles? It is, indeed, as you say, my faithful clerk," cried the vicar. "Bless me, — bless me, what can have happened! Is the vicarage on fire? Has the old roof at last tumbled into the chancel?"

"Oh, sir! — oh, my dear sir!" vociferated the terrified servant of the church, whose blanched cheeks made his red nose appear like a volcano burning amidst a desert of snows, "poor Tom Plank has blown the roof off his house, and is so dreadfully wounded that it is impossible for him to survive long, if, indeed, he is not already dead."

“ How did it happen ? ” exclaimed several voices.

“ From a *sperriment* ! a *sperriment* ! it all came from a *flossical sperriment* ! ” replied the breathless man of the last word : “ but, pray, gentlemen, come directly to the village ; for mercy’s sake, gentlemen, don’t delay a moment.”

The vicar and Mr. Seymour instantly proceeded with the terrified clerk towards the house of the unfortunate “ planer of deals ; ” they had not gone far, before they met several other villagers, who informed them that Dr. Doseall was in attendance upon the wounded man, and had pronounced him to be in the greatest danger.

On their arrival at the house, the roof of which they at once perceived had not suffered in the fray, they learned that Tom Plank had been engaged in some experiments for producing a *vacuum*, in the prosecution of his new scheme of propelling passengers through a funnel ; and that in firing a mixture of oxygen and hydrogen gases, he had neglected the usual precaution, and blown up his apparatus ; the stop-cock had been unceremoniously expelled through the

window, and, in its passage, had ungraciously flown in the face of its master, and left the traces of its indignation in the form of a very slight scratch upon his forehead; this accident, with a burn of the fingers was the only personal injury he had sustained.

“Come, come,” said Mr. Seymour, “no mischief has occurred, and the accident will, I trust, teach you more caution for the future. You are not the first adventurer who has *burned* his *fingers* by *bubble* speculations, and in vain attempts to *raise the wind*.”

Dr. Doseall, however, with a countenance of stern composure, and a portentous shake of the head, maintained that the accident was by no means so trifling as Mr. Seymour appeared to suppose; and, in conformity with this view of the case, he had prudently bled his patient largely, and directed sundry mixtures and lotions, together with a *quantum sufficit* of laudanum, in order, as he said, “to keep down the swelling and puffing of the head,” although there were those present who were uncharitable enough to hint, that the true object of these elaborate proceedings was to *swell* his own bill, and to *puff* his professional renown by magnifying the



danger of the case. After a short interval, engaged in answering the numerous enquiries of the anxious spectators, the doctor, with an air of awful solemnity, advanced to the sufferer, and offered him a bolus of no ordinary size; upon the virtues of which he descanted in most touching language.

“Avaunt!” exclaimed Mr. Seymour, “do you suppose that Tom Plank has the throat of the great dragon which the Indians believe to swallow the moon, and thus to produce the phænomena of lunar eclipses? Away with thy treacle and pipe-clay; there cannot be the least pretext for this parade of remedies; I warrant you that Dame Nature, unless she be put out of humour by your officious interference, will heal the scratch before to-morrow’s sun rises.”

The doctor, as our readers will readily imagine, was very justly incensed at this ex-professional interference. His first determination was to treat the matter as a joke, and to turn the laugh against the unmannerly intruder; but the abortive smile was strangled in its birth, and suffused the hue of death over his visage. Never did a countenance, in the focus of his blue window bottle, by candle-light, exhibit a more ghastly

pallor ; and we can scarcely predict what might have been the consequence, had he not instantly administered a consoling cordial to his nostrils ; for, be it known, that the doctor took snuff, in the same extravagant proportion as his patients took physic. Having by these means recovered his self-possession, he instantly seized his cane, and waving it with as much dignity, as Jove is said to brandish his thunder, he departed in deep dudgeon, which was expressed by a snarl, not unlike that of a hungry dog, who is unexpectedly despoiled of a savoury bone.

No sooner had the doctor retreated from the field of blood, than Mr. Twaddleton advanced to the suffering artist, deeming the moment of bodily fear a favourable opportunity for an attempt to reclaim him from the error of his ways. “ Tom Plank,” said he, in a mild tone, “ hadst thou given ear to the warning voice of thy spiritual pastor, and, instead of ridiculing his advice at the sixpenny club, had, like a true Christian and worthy parishioner, given heed to it, thou wouldst not, at this time, have been placed in such bodily peril. Mr. Seymour has consoled thee by his opinion ; sincerely shall I pray that his judgment may be confirmed by the result,

and that the visitation may have a salutary influence upon thy future conduct. Quit the pursuit of these bubbles, and leave wiser men to investigate the secrets of nature; let me exhort thee to return to thy craft, and do not, like the dog in the fable, lose the substance, in the vain pursuit of a shadow."

How far the vicar succeeded in this well-timed remonstrance, we are, at present, unable to state.

As the party left the house they met Mrs. Seymour, with Tom and Louisa, whose looks sufficiently testified the anxiety they had suffered.

"Is it all over? Is he dead?" asked Mrs. Seymour.

"No, no; he is quite safe; it was an extremely slight accident, although Doseall wished us to believe that it was likely to terminate in some dreadful manner. The character of that man has undergone a strange metamorphosis, since the receipt of his diploma; he was formerly a quiet, civil, and unobtrusive sort of person, but he now parades with all the self-importance of a parish beadle on an Easter Sunday; there is a Spanish proverb which may be very aptly ap-

plied to him, ‘ The higher the monkey ascends in the tree, the more you can see of his tail.’ But to return to Tom Plank’s accident. The vicar thinks that it may prove the means of driving science *out* of his head, and I intend to make it subservient to driving it still farther *into* ours.”

“ What do you mean ? ” cried Tom.

“ I mean that it was an extremely apposite accident for illustrating the subject, upon which we were engaged at the moment of interruption.”

“ This is the second accident then,” observed Louisa, “ that will have served us in our scientific studies. What a philosopher,” continued she “ must Dr. Doseall become, if he profit by every accident he witnesses ! ”

“ Knowledge, my dear girl, is not promoted by the opportunity of seeing, but by the faculty of skilfully observing, and reflecting upon what we see ; were it otherwise, the merit of a traveller might be at once estimated by the number of pairs of shoes he had worn out. Whenever, therefore, you hear of a discovery having been made *by accident*, do not, on that account, depreciate the merits of its author. It is certainly true, that many an important truth



has been brought to light from some casual observation (3), but the dexterity with which such observation was applied constitutes the merit of the discoverer. Well, but to show in what manner the accident of Tom Plank bears upon the subject under discussion:—He had ignorantly fired a quantity of oxygen and hydrogen gases in a tin vessel; the consequence of the combustion was the immediate formation of a *vacuum*: and what happened? Why, the pressure of the external air, not being any longer balanced by elastic matter in the interior of the apparatus, crushed it with violence, as any other enormous weight might have done; and so ended the accident, which report magnified into a most awful catastrophe.”

As the party proceeded on their way home, they continued to discourse on the subject of the air’s pressure.

“If the atmosphere exerts so enormous a pressure, and has so much weight,” observed Louisa, “it is strange to me that it should not fall down on the earth.”

Mr. Seymour replied, “that the air was a peculiar fluid, which, from its elastic properties, was distinguished by the term of an *elastic*

*fluid*, the particles of which were too far distant from each other to exert any cohesive attraction amongst themselves.”

“ But I suppose,” said Tom, “ that it gravitates, or is attracted by the earth ; what then can be the reason, as Louisa says, that it does not fall, like any other body, to the ground ? ”

“ And so it actually does,” replied Mr. Seymour. “ The lower stratum of the atmosphere rests upon the ground, but the strata above it do not fall, because they are supported by the particles beneath them, in the same manner as the water at the surface of a basin is supported by that at the bottom : the only difference in these two cases arises from the one being an elastic, and the other an inelastic fluid ; so that the air after compression resumes its original dimensions ; and since the atmosphere, by the action of gravity, is always in a state of compression, so is it always endeavouring to expand itself.”

“ If, then, the force of gravity were diminished,” observed Louisa, “ the air would become much lighter, and I suppose that is the true reason of its being so much less dense in the upper regions.”

“Scarcely,” replied her father. Have you forgotten the explanation\* which I lately gave you, of the diminution in the weight of bodies, at a distance from the earth’s surface.”

“I recollect it perfectly,” exclaimed Tom; and it explained to us the reason that a marble fell from the top of a house, and from the ball of St. Paul’s, with the same velocity.”

“And yet I am quite sure,” said Louisa, “that I have lately read an account of the air being so extremely light, upon the top of a high mountain, as to affect the breath and occasion great uneasiness.”

“I do not deny the fact, my dear, I only question your explanation of its cause. Can it not, think you, be accounted for upon some other principle than that of the diminished force of gravity?”

Louisa was unable to suggest any other probable reason.

“The fact, then,” said her father, “is simply this; since the air is elastic, or capable of yielding to pressure, so, of course, the lower parts must be more dense, or in a greater state of compression than those which are above them.

\* See Vol. I. page 67.

In a pile of fleeces of wool, are not the lower fleeces pressed together by the weight of the superior ones, and do they not lie light and loose, in proportion as they approach the uppermost fleece, which receives no external pressure, and is confined merely by the force of its own gravity?"

"Clearly," said Louisa.

"Well, then; we will suppose, for example, that the whole column of the atmosphere were divided into a hundred parts, and that each of these parts weighed an ounce, would not the earth, and all things on its surface, be, in such a case, pressed upon with the whole hundred ounces?"

"No one can deny that;" said Tom.

"The lowest stratum of air," continued Mr. Seymour, "would be pressed upon by the 99 ounces above it; the next, by 98; and so on, until we arrived at the 99th stratum from the bottom, which would, of course, be subjected to no more than one ounce of pressure, or to the weight of the last and highest stratum."

The children were perfectly satisfied with this simple explanation; and Tom enquired whether, for the same reason, the water at the bottom of



the sea must not be very dense, and unlike that we are accustomed to observe on the surface; his father, however, corrected this notion by stating that water, not being, like air, elastic and compressible, would not suffer any material diminution in volume, although pressed even by the enormous weight of the superincumbent ocean."

"But this would not be the case, if we could dig a pit to the centre of the earth," said Tom; "the air, I suppose, in that case, would be very dense at the bottom."

"The density of the air," replied his father, "would, undoubtedly, materially increase as we descended; because the air is compressible. It has been calculated that, at the distance of thirty miles below the surface, the air would have the same density as water; and, at the depth of forty-two miles, that of quicksilver; while, at the centre, it would probably be more solid than any substance of which we have any idea, for its density would be thousands of millions of times greater than that of mercury."

"Before we quit the subject of the air's elasticity," said Mr. Seymour, "we will consider the philosophy of the *pop-gun*, an amusement

with which, I have no doubt, you are well acquainted."

"Indeed I am, papa; but do you allude to the quill, or to the wooden pop-gun?"

"The principle in both is the same; tell me, therefore, the origin and nature of the force which enables you to shoot your pellet to so considerable a distance."

"It depends upon the action of the air," replied Tom.

"Undoubtedly: but your answer is too general; I wished you to state, in precise terms, the changes which the air undergoes upon this occasion. You first ram in your pellet to the farther end of the tube, do you not?"

"To be sure; and then I drive in a second pellet, and on forcing this forward, the first flies out with prodigious force."

"Very well: now examine what takes place; on propelling forward your second pellet, you condense the air which is enclosed between the two, until its elastic force becomes so great as to overcome the friction of the first pellet; thus released, the air expands with considerable force, and imparts a rapid motion to the pellet."

“ I have frequently heard of the air-gun,” said Louisa, “ I suppose it depends upon a similar principle.”

“ It does ; and it affords a very striking example of the surprising force which air is capable of exerting, when condensed to a considerable degree; for, by means of this instrument, bullets may be propelled with a force very nearly equal to that of gunpowder.”

“ It is a curious fact,” observed the vicar, “ that although the air-pump is a modern invention, yet the air-gun, which is so nearly allied to it in the construction of its valves and condensing syringe, should have existed long antecedent to it; for it is recorded that an air-gun was made for Henry IV. by Marin, of Lisieux, in Normandy, as early as 1408 : and another was preserved in the armoury at Schmetau, bearing the date of 1474.”

“ But the air-gun of the present day,” said Mr. Seymour, “ is very different from that which was formerly made, and which, like the pop-gun, discharged but one bullet, and that after a long and tedious process of condensation, while it is now made to discharge five or six without any visible variation of force, and

will even act upon a dozen, but with less effect."

"I feel very curious to learn something more about this air-gun," said Tom.

"There is a reservoir for the condensed air," replied Mr. Seymour, "which is secured by a nicely constructed valve, and which is made to open by pulling the trigger of the gun, so that a portion only of the air is disengaged, which, rushing into the barrel, gives motion to the ball."

"But how is the condensed air introduced into the reservoir?" asked Tom.

"By means of a condensing syringe," replied his father; "but I will take an opportunity of exhibiting the instrument in operation."





### CHAP. III.

THE SOAP-BUBBLE.—THE SQUIRT.—THE BELLOWS;  
AN EXPLANATION OF THEIR SEVERAL PARTS—BY  
WHOM THE INSTRUMENT WAS INVENTED.—THE  
SUCKING AND LIFTING, OR COMMON PUMP.—AN  
ANTIQUARIAN CONVERSATION, IN WHICH MR.  
TWADDLETON AND MAJOR SNAPWELL GREATLY  
DISTINGUISH THEMSELVES.

“**TOM,**” said his father, “bring me a saucer with some hot water; a piece of soap, and a tobacco-pipe. I have promised to teach John the art of blowing soap-bubbles.”

Tom immediately proceeded to execute his commission, and shortly rejoined the party on the lawn, bringing with him all the necessary implements for bubble-blowing. John, under the direction of his brother, made the lather; and Mr. Seymour, turning towards the elder children, asked them whether they understood the philosophy of the operation they had just witnessed; they were, however, unable to return a satisfactory answer, and their father, therefore, proceeded as follows:—

“Most liquids, by agitation, exhibit the appearance of froth, in consequence of the escape of the air in small bubbles, which had been forced into them by the operation. If, however, the liquid be viscid and tenacious, like soap and water, the air is, as it were, imprisoned in the mass, producing the appearance which is commonly called *lather*.”

Louisa here enquired “whether the air did not escape with more or less readiness, according to the degree of resistance it met with in the liquid.”

“I thank you,” said Mr. Seymour, “for having so kindly assisted me in the explanation.”

Louisa smiled at this mark of her father's approbation, and Mr. Seymour proceeded, — “It is on that very account, that spirit, after it has been shaken, so soon regains its transparency; for, in consequence of the superior lightness of that fluid, and the little cohesion which subsists between its particles, the air makes a rapid escape. In like manner we may account for the spongy appearance which gives such superiority to our bread; in that case, the air disengaged during the fermentation of the dough cannot escape through so viscid a mass; it therefore remains, and thus produces the eyes or bubbles, which you may always observe in every well-baked loaf.”

“See, papa,” exclaimed Tom, “the bubbles, which John has blown in the lather, are not round, but angular figures — they appear to be like the hexagons which we used to cut out for our *papyro-plastics*.”\*

“They are certainly hexagonal,” replied Mr. Seymour; “and the form arises from the pressure of the bubbles upon each other. The

\* See Vol. I. p. 135. *note*.

same appearance is to be seen in the pith of vegetables, when examined by the microscope, and is the result of the general re-action of the solid parts, similar to that which takes place in the honey-comb."

"I thought, papa," said Louisa, "that the form of the cells in the honey-comb was to be ascribed to the skill of the bee."

"That is a very general opinion, but it is not correct; it is now acknowledged by philosophers to be the effect of the mechanical laws which influence the pressure of cylinders composed of soft materials;—the nests of solitary bees are uniformly circular; and the cells of the pith of wood are only hexagonal in the central parts; towards the extremity, where there is but little pressure, they are circular.\* I will take an opportunity of showing you the same fact in the berries of a lobster; but let us proceed to blow some bubbles. Plunge the bowl of the tobacco-pipe into the lather."

Tom obeyed his father's directions, and blowing through the stem, produced a bubble.

"See! see!" cried Louisa, "what a beau-

\* Davy's Lectures on Agricultural Chemistry, Lect. III.



tiful bubble ! but there is a quantity of soap hanging to its under part."

" I will take it off with my finger," said Mr. Seymour.

" There it goes !" exclaimed Tom.

" What beautiful colours it displays ! as bright and gaudy as those of the rainbow," observed his sister.

" It has burst !" cried Louisa.

" Ah ! my dear children," murmured the vicar, with an air of pensive gravity, " '*Tenues secessit in auras,*' as the poet has it. Even thus is it with all the full-blown bubbles of our fancy, raised by the breath of hope ; the moment they appear most vivid and promising to our imagination, they vanish 'into air, into thin air,' like the gaudy and unsubstantial soap-bubble you have just witnessed ; but proceed to blow another."

" There is one !" exclaimed Louisa ;—" see, it is of an oblong shape, like an egg ! — there it goes, — but I declare it is now perfectly round !! — what can be the reason of its changing its figure ?"

" I am glad you have asked that question,

because my answer will serve to illustrate an important property of air, and which, indeed, is common to all fluids. While the upper part of the bubble was attached to the bowl of the pipe, its gravity being resisted, drew it into an elliptical form; but the instant it was detached, the contained air pressed equally in all directions, and the bubble, in consequence, became a perfect sphere."

"I do not exactly understand what you mean 'by pressing equally in all directions.'"

"The expression is surely sufficiently intelligible. Did you not learn in our conversation of yesterday, that air has weight, and exerts a pressure as much upwards as downwards and laterally? Were this not the case, how could the air in the interior of our bodies counteract the pressure of the atmosphere? The form of the bubble proves the same fact in a different way; for, had the air in its cavity pressed more in any one direction than in another, the bubble could not have been round, or, to speak more correctly, a sphere."

"What are you musing about?" cried the vicar, who had observed the attention of the boy riveted upon the bowl of the tobacco-pipe:

“ I am sure, from your countenance, that some circumstance is puzzling you.”

“ You are right, my dear sir ; I was just then thinking how it can possibly happen, that the bubble should not have a hole in its upper part ; for, while I am blowing it up, there must, of course, be a communication between my mouth and its interior, or else how could the air pass into it ?”

“ True,” said his father ; “ but the act of throwing it off from the bowl of the pipe will unite this breach ; for there exists a strong cohesive attraction between the attenuated particles of the lather ; you will, therefore, perceive that, on this account, the bubble will be more readily and securely separated by a lateral than a perpendicular motion of the pipe.”

“ I wish,” said Tom, “ that I could discover some method of preventing their bursting so soon, for there is scarcely time to examine them before they vanish. What can be the cause of their short duration ?”

“ Consider, my dear boy, the frailty of their structure, and I think that the precarious tenure of their existence will cease to astonish you ;

indeed, the wonder is, that they should endure so long. The film, of which they consist, is inconceivably thin, so that the slightest impulse will be apt to rupture them; besides which, there must be a considerable evaporation going on from their surface, while the contraction of the contained air, from change of temperature, must also tend to limit their duration. You must likewise remember that the soap-lather will have a tendency to gravitate towards the depending part of the bubble, and, consequently, by quitting the upper portion, to render it of still greater tenuity. This last effect might, perhaps, be obviated, in some measure, by giving a rotatory motion to the bubble around its axis; but this, again, would accelerate the evaporation; which, after all, is the principal cause of the shortness of its duration; so that, unless this latter effect could be remedied, I despair of suggesting any expedient by which the frail existence of our airy structure could be protracted. You must, therefore, seek, from a succession of bubbles, the prolongation of an amusement, which no single one can afford you."



“ And could not the evaporation be prevented ? ” asked Tom.

“ If the bubble were blown in a glass vessel, and the latter immediately closed after the operation, it would remain for some time ; I remember having once preserved a bubble in this manner for a very considerable period.”

Tom, however, did not appear to relish this scheme ; as, he said, the great sport arose from watching the movements of the floating bubble ; the boy, accordingly, determined to pursue the amusement in the usual manner.

During this dialogue, little John had succeeded, for the first time, in launching the airy bauble. Imagination always tinges the objects of our first efforts with brilliant tints : no wonder, therefore, that John, with a shout of ecstasy, should have pronounced it to have been the most beautiful bubble he had ever seen ; in truth, the sun was shining brightly, and the colours thus produced very justly excited the admiration of all present.

“ I cannot understand the cause of these beautiful colours,” said Louisa.

Mr. Seymour expressed a fear that, in their

present state of knowledge, they would be scarcely able to understand the explanation he should afford them. "But," said he, "I believe you know that a ray of light is divisible into seven colours, and that when it passes through certain media, or is reflected from certain surfaces, this division is effected, and the various colours produced. (4) The film of the soap-bubble is one amongst the latter bodies; but I must refer you, for farther information upon this subject, to Mrs. Marcet's beautiful account of 'Refraction and Colours.'"

"I remember it well," said the vicar, "and have always considered it the most luminous chapter in the work."

"A capital pun, upon my word," retorted Mr. Seymour; "a *luminous* chapter: I have still some hopes of you, vicar."

Mr. Twaddleton was sadly disconcerted at this joke; and has been often since heard to declare, that he would not intentionally have used such an expression for the best edition of Maro.

"Now, Tom," said his father, "fetch your squirt, for we have not yet finished our enquiry into the effects of the air's pressure."

The squirt was produced ; but it was out of repair ; for, on attempting to fill it with water, the instrument entirely failed in the performance of its office.

“ I see the defect,” said Mr. Seymour, “ which a little string will easily remedy.”

A piece of string was instantly produced from that universal depot, the breeches pocket of a school-boy. Mr. Seymour said he should bind a portion of it around the end of the piston.

“ What do you mean by the *piston* ?” enquired Tom.

“ The rod which moves up and down in the cylinder, or tube ; and, unless its end fit so exactly as to prevent the admission of air, it is clear that the squirt cannot draw any water. It was for the purpose of making this part fit tightly that I wanted the string, and you will now perceive that the instrument is ready for use :—fetch me a vessel of water.”

Tom soon produced the water, and on placing it on the ground, requested that he might be allowed to fill the squirt. This he accordingly effected without difficulty, and on pressing down the handle, he projected a stream of water to a considerable distance.

“ I perceive,” said Tom, “ that the stream describes a curve like my ball.”

“ To be sure ; it is under the joint influence of the same forces, viz. that of projection and of gravity. But explain the operation of the squirt ?”

“ As soon as I raised the piston, an empty space was left in the lower part of the cylinder, which I suppose would have remained as a *vacuum*, had not the water rushed into it.”

“ And why did the water rush into it ?”

Tom hesitated.

“ Was it not, think you, owing to the pressure of the atmosphere upon the surface of the water ? When you raised the piston, the air above it was also raised, and ultimately driven out by the force of the ascending piston ; and since the air could not find any entrance from below as long as the point was under the water, the interior of the squirt would necessarily have remained quite empty, or have been a vacuum, had it not been for the weight of the atmosphere, which, not having any counteracting pressure, drove the water into the tube, and thus filled it ; and which, by pressing down the piston, you again expelled with considerable force.”



“Your explanation,” cried Louisa, “is so clear and intelligible, that I feel quite confident I could now explain any machine that owes its action to the exhaustion of the air, and the pressure of the atmosphere.”

“If that be your belief,” said Mr. Seymour, “I will not lose a moment in putting your knowledge to the test. — Tom, do you run into the house, and fetch hither the kitchen bellows.”

The bellows were produced, and Louisa, having been desired by her father to explain the manner in which they received and expelled the air, proceeded as follows: “Upon raising the upper from the under board, the interior space of the bellows is necessarily increased, and immediately supplied with an additional quantity of air, which is driven into it by the pressure of the atmosphere; when, by pressing down the upper board, it is again expelled through the iron tube or nosle.”

“To be sure,” said Tom, “in the same manner that the water was expelled from my squirt, when I pushed down the handle.”

“So far you are quite correct,” said Mr. Seymour; “but you have not yet told us the use of the hole in the under-board, and which is co-

vered, as you perceive, with a movable flap of leather : it is termed a valve, or ‘ *wind-clap.*’ ”

“ That,” replied Tom, “ is for the purpose of admitting the air, when we raise up the board.”

“ Exactly so ; and also to prevent the air from passing out again, when you press it down. I wish to direct your attention particularly to this contrivance, because, simple as it may appear, its action will teach you the general nature of a valve. Without it, the operation of filling the bellows with air would have been so tedious as to have destroyed the utility of the instrument ; for the air could, in that case, have only found admission through the nose, and that, again, would have been attended with the additional disadvantage of drawing smoke and other matter into its cavity ; when, however, you raise up the board, the air, by its external pressure, opens the wind-clap inwards, and thus finds an easy entrance for itself ; and when you press the board downwards, the air, thus condensed, completely shuts the valve, and its return through that avenue being prevented, it rushes through the tube.”

The children were much pleased with the

simplicity of this invention, and Tom enquired of the vicar who first thought of it.

“ We are informed by Strabo,” replied Mr. Twaddleton, “ that Anacharsis, the Scythian philosopher, who lived in the time of Solon, about six hundred years before Christ, invented the bellows, as well as the anchor, and potter’s wheel; but,” he added, “ there is some reason to doubt the truth of this statement. The bellows, however, were certainly known to the Greeks; and the great poet Virgil alludes to them in his fourth Georgic :\*

——— ‘ *Alii taurinis follibus auras  
Accipiunt redduntque.*’ ”

Mr. Seymour now proposed that they should proceed to consider the structure and operation of the pump.

“ I suppose,” said Louisa, “ that the pump raises water in the same manner as the squirt.”

“ Exactly upon the same principle,” replied her father; “ but the machinery is a little more complicated, since its object is not to force the water out of the pump, at the same end of the pipe at which we draw it in. We will, however,

\* Line 171.

proceed to the stable-yard, and examine the pump; and do you, Tom, provide a piece of chalk, in order that I may make a sketch of some of its principal parts."

The party immediately proceeded; and, as they walked along, Mr. Seymour desired the children to remember that the weight of the atmosphere was estimated as being equal to that of fifteen pounds upon every square inch of surface; and that the moment the water arrived at such a height as to balance that pressure, it could ascend no higher: he added, that the altitude at which such a balance took place was about 32 or 33 feet above the surface.

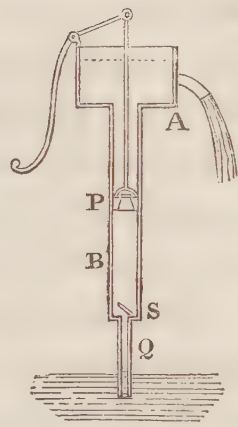
"If that be the case," said Louisa, "the pump, of course, can never raise water from any well of greater depth than that which you state."

"Not without some additional contrivance, which I shall afterwards explain to you," replied Mr. Seymour.

The party had, by this time, arrived at the pump; its door was opened, and as much of the apparatus exhibited as could be conveniently exposed. Mr. Seymour then chalked the annexed sketch upon the stable door.



“Is that a pump?” cried Tom: “I should certainly never have guessed what you intended to represent.”



“It is not a perspective drawing, my dear, but a representation of the different parts as they would appear, were it possible to cut the pump in halves, from top to bottom, without disturbing any of its arrangements. A drawing of this kind, which is frequently used for the sake of explanation, is termed a *section*.”

Mr. Seymour here took an apple from his pocket, and having cut it in two, observed that the surfaces thus exposed presented *sections* of the fruit. This illustration was understood by all present, and Mr. Seymour continued, “I have here, then, a section of the common household pump. AB is the cylinder or barrel; P the air-tight piston which moves, or works within it, by means of the rod; Q is the ‘suction,’ or ‘feeding pipe,’ descending into a well, or any other reservoir; S the valve, or little door, at the bottom of the barrel, covering the top of the feeding pipe; and there is a

similar valve in the piston, both of which, opening upwards, admit the water to rise through them, but prevent its returning. As this part of the apparatus is no less ingenious than it is important, I will sketch the valve, or *clack*, as it is termed by the engineer, on a larger scale."

Their father then chalked the annexed figure; from which its construction was rendered perfectly intelligible to the children.



Mr. Seymour proceeded: "When the pump is in a state of inaction, the two valves are closed by their own weight; but, on drawing up the piston *p*, from the bottom to the top of the barrel, the column of air, which rested upon it, is raised, and a vacuum is produced between the piston and the lower valve, *s*; the air beneath this valve, which is immediately over the surface of the water, consequently expands, and forces its way through it; the water then ascends into the pump. A few strokes of the handle totally excludes the air from the body of the pump, and fills it with water; which, having passed through both valves, runs out at the spout."

"I understand how water may be thus

raised to the elevation of 32 feet, but I have yet to learn the manner in which it can raise it above that distance," said Louisa.

"It is undoubtedly true that, if the distance, from the surface of the water to the valve in the piston, exceed 32 feet, water can never be forced into the barrel; but you will readily perceive that, when once the water has passed the piston valve, it is no longer the pressure of the air which causes it to ascend; after that period, it is raised by lifting it up, as you would raise it in a bucket, of which the piston formed the bottom; and water having been so raised, it cannot fall back again, in consequence of the valve, which is kept closed by its pressure. All, therefore, that is necessary, is to keep the working barrel within the limits of atmospheric pressure; we have then only to fix a continued straight pipe to the top of the barrel, and to lengthen the piston rod in the same proportion, and the water will continue to rise at each successive stroke of the pump, until at length it will flow over the top of the pipe, or through a spout inserted in any part of its side. The common pump, therefore, is properly called the *sucking and lifting pump*."

The party expressed themselves fully satisfied; and Tom enquired who invented the machine.

“It is an instrument of great antiquity,” replied his father; “its invention is generally ascribed to Ctesibius of Alexandria, who lived about 120 years before Christ; but the principle of its action was not understood for ages after its invention. The ancients entertained a belief that ‘Nature *abhorred* a vacuum;’ and they imagined, that, when the piston ascended, the water immediately rushed forward to prevent the occurrence of this much-dreaded vacuum. In the seventeenth century a pump was constructed at Florence, by which it was attempted to raise water from a well to a very considerable altitude, but it was found that no exertion of this machine could be made to raise it above 32 feet from its level. This unexpected embarrassment greatly puzzled the engineer, until Galileo suggested that the pressure on the water below must cause its ascent into the pump, and that, according to this theory, when it had risen 32 feet, its pressure became equivalent to that of the atmosphere, and could, therefore, not rise any higher; and as they did



not, at that time, understand the construction of the piston valve, the design was abandoned. It is now time to conclude your lesson: to-morrow, I hope, we shall be able to enter upon the subject of the kite."

"See!" exclaimed the vicar, "here comes our friend, the major."

"I have really been so engaged, for the last few days, in making domestic arrangements at my new residence, that I have not found any time to call either at the lodge or vicarage," said the major, "and I much fear," continued he, "that I shall be obliged to make another journey to London; for these lawyers are extremely dilatory in their proceedings; and there is my friend Wilcox conjuring up difficulty after difficulty, with respect to the title of Osterley Park. The worthy man has my interest so deeply at heart, that I fear his morbid anxiety renders him fastidious."

"And when do you propose to set off?" asked Mr. Seymour.

"The day after to-morrow, unless I receive some satisfactory letters by the next post," answered the major.

The vicar here expressed a hope that his

two friends would honour him with a visit; he said, that there were some points of difference between himself and the major, which he should much like to refer to Mr. Seymour. It was agreed that the party should, at once, walk to the vicarage, and take into consideration the several grave matters which had been the subject of so much learned controversy.

In their way thither, the vicar expatiated, with some warmth, upon what he was pleased to term "the foibles" of his antiquarian friend; he complained of his scepticism upon points that were perfectly unquestionable.

"You are now alluding, I suppose," said the major, "to the doubt I expressed respecting the authenticity of your leather money?"

"That is one of the many subjects, upon which I must say you have betrayed a deficiency in historical knowledge. Seneca informs us, that there was anciently stamped money of leather; and the same thing was put in practice by Frederick II. at the siege of Milan; to say nothing of an old tradition amongst ourselves, that in the confused times of the barons' wars, the same expedient was practised in England."

"You strangely mistake me," replied the

major; “ I never questioned the truth of these historical statements; I know full well that numerous substances have, at different times, and in different countries, been adopted in exchange, as conventional representatives of property. I have already stated that cattle were employed as the earliest measure of value. We find, for instance, in Homer, that the golden armour of Glaucus was valued at a hundred, and that of Diomedes, at ten oxen. Among the Indians, *cowries*, or small shells, are used; and the Abyssinians employ salt, bricks, and beads, for this very purpose; the ancient Britons are said to have circulated iron rings as money. The Hollanders, we know, coined great quantities of pasteboard in the year 1754; and Numa Pompilius certainly made money both of wood and leather.”

“ And yet you doubt the authenticity of my leathern money, which I am fully persuaded was coined in 1360, by John, king of France, who, having agreed to pay our Edward the Third the sum of 3,000,000 golden crowns for his ransom, was so reduced as to be compelled to a coinage of leather for the discharge of his household expences.”

“ I have only questioned the authenticity of that specimen which I saw in your cabinet,” replied the major ; “ and so must any person who views it through a medium unclouded by prejudice. I will stake my whole library to a horn-book, that our friend Mr. Seymour will agree with me in pronouncing it a fragment of the heel of an old shoe ; let him observe the perforation, and say, if he can, that it has not been produced by a nail or peg. But really, my dear Mr. Twadleton, you have forced me, much against my inclination, into this controversy.”

“ Very good, sir ; very good ! the heel of an old shoe, forsooth ! But I thank you, Major Snapwell,” exclaimed the vicar, with some warmth ; “ I thank you, sir. Your assertion, while it evinces your own want of historical information, establishes, beyond doubt, the authenticity of my treasure, and the triumph of my opinion.”

“ Assuredly,” said Mr. Seymour, with a wicked smile ; “ I dare say there may be numerous holes in this leathern coin ; for many have been the antiquaries who have, doubtless, *pinned* their faith upon it.”



“Psha, psha!” cried the vicar; “for once, at least, Mr. Seymour, let me entreat you to be serious; the subject, sir, is important, and merits your respect. It is from that very hole that I am enabled to identify the coin: yes, major, from that very hole, which you affect to despise, am I enabled to derive its principal claim to antiquity. Are we not expressly informed, that the leathern money of John of France had a little nail of silver driven into it?”

“Well, then,” continued the major, “what say you to that tell-tale stitch, which I so unfortunately picked out with my penknife?”

“Admirable ingenuity! most refined sophistry! provoking perversion!” exclaimed the vicar. “It is really amusing to observe the address with which the prejudiced observer distorts every fact to his own advantage. Why, bless me, sir, that stitch is strong enough to drag fifty such opponents out of the slough of unbelief.”

“Do explain yourself,” said Mr. Seymour.

“Explain myself! the stitch speaks for itself, sir. Were not these leathern coins strung together in different numbers, to facilitate pay-

ments? For, you will admit, that it would have been extremely inconvenient to have coined single pieces of leather, of different denominations."

The antiquaries had reached the vicarage before the conclusion of their discussion; and, as the reader will probably agree with us in thinking that a question of such grave historical importance, ought not to be decided without due care and deliberation, we shall afford the disputants a reasonable time for their researches, and put an end to the present chapter.



## CHAP. IV.

THE KITE. — ITS CONSTRUCTION. — THE TAIL. — AN AUTHOR'S MEDITATIONS AMONG THE CATACOMBS OF PATERNOSTER ROW. — WORKS IN THEIR WINDING SHEETS. — HOW MR. SEYMOUR STRUNG PUNS AS HE STRUNG THE KITE'S TAIL. — THE VICAR'S DISMAY. — THE WEATHER, WITH THE HOPES AND FEARS WHICH IT ALTERNATELY INSPIRED. — KITES CONSTRUCTED IN VARIOUS SHAPES. — THE FIGURE USUALLY ADOPTED TO BE PREFERRED. — THE FLIGHT OF THE KITE. — A PHILOSOPHICAL DISQUISITION UPON THE FORCES BY WHICH ITS ASCENT IS ACCOMPLISHED. — THE TAIL. — THE LAMENTATIONS OF TOM PLANK, WITH WHICH EVERY EXPERIMENTALIST WILL SYMPATHISE. — THE CAUSES AND VELOCITY OF WIND EXPLAINED.

THE children were summoned into the library, and informed by their father, that he was at leisure to explain the philosophy of the kite ; a

subject with which Tom had repeatedly expressed some impatience to become acquainted.

“ It is a beautiful day,” exclaimed the boy, joyously ; “ and there is such a delightful breeze, that I should really call it a complete *kite-day*.”

“ Gently, my fine fellow,” replied Mr. Seymour ; “ the bird must be fledged, ere it can fly. We have not, as yet, any kite ; for you know that the one you possess is shattered beyond the possibility of repair.”

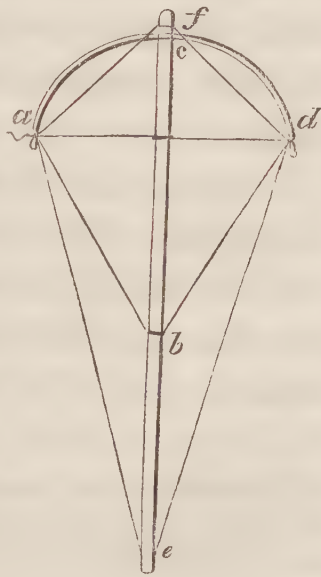
“ True, papa ; but could not Robert just step into the village and buy one ? I saw several kites in the shop of Peg Robson yesterday.”

“ I do not doubt it, my boy : but the kites which are to be found in the toy-shop are made to sell, rather than to fly ; and to *raise the wind*, for the benefit of the vender, rather than to be raised *by it*, for the amusement of the purchaser : we must, therefore, construct one for ourselves ; and see, I have, accordingly, prepared all the necessary materials for the purpose. I have here, as you perceive, a straight lath of deal, about three quarters of an inch wide, and less than a quarter of an inch thick, and about four feet in length ; this is quite



ready for forming the *back-bone* of the kite: and now for the bow. The cooper has complied with my directions, and sent an unbent hoop, as free as possible from knots; you observe that it is about the same length as the lath, but it will be necessary to pare it down a little at each end, in order to make it bend more readily to the required shape."

This having been accomplished, Mr. Seymour proceeded to form the framework of the kite in the following manner. He first ascertained the central point of the hoop, by balancing it on his fore finger; he then affixed that point, by means of string, to the lath, at *c*, about an inch and a half from its upper extremity; a notch was next cut in each end of the hoop, or bow, *a d*; having fixed the string in the notch *a*, he drew it through another, *e*, previously cut in the bottom of the lath, and carried it to the opposite end of the bow *d*; the skeleton now presented



the usual form of the kite. The next point, therefore, was to ascertain whether the two sides of the bow were in equilibrio, which he determined by balancing the lath on the finger, and observing whether it remained horizontal, or dipped on either side. This adjustment having been accomplished, Mr. Seymour next continued the string from *d* across the skeleton to the opposite notch *a*, giving it one turn round the lath in its way; from *a* it was carried to *f*, and wound round the top of the lath, and then again fastened at *d*; from *d* it was extended rather more than midway down the lath, and having been secured at *b*, was finally carried to, and secured in the notch *a*. The framework was now pronounced by Mr. Seymour to be complete.\*

The next part of the process was to cover it with paper. Mr. Seymour observed, that the best kind which could be employed for this purpose was that known amongst stationers by the name of *fan paper*, so called from its being

\* The author has been thus minute, in order to afford his young friends clear directions for constructing a kite, and which, as far as he knows, are not to be found in any work hitherto published.

manufactured for the use of the fan-maker ; its merits, he said, depended upon the size of its sheets, as well as upon the thinness and firmness of its texture ; this, however, was not at hand, he was therefore obliged to rest satisfied with its best substitute, viz. folio sheets of large thin post.

The party now went “ ding-dong ” to work ; paper, paste, and scissors were immediately put in requisition. Sheets of paper were laid smooth on the table, and so arranged that each sheet overlapped its neighbour about half an inch. The skeleton of the kite was then placed upon them, and the paper was cut to its figure ; a margin, of about three quarters of an inch, having been left around it, except over the bow, where the margin was extended to an inch in width : this arrangement was for the purpose of allowing the paper to turn over the framework, when pasted to it. This part of the work having been completed, and a sufficient time allowed for the drying of the paste, Mr. Seymour proceeded to fix the string, usually termed the *belly-band* : for this purpose, two holes were drilled through the lath, at equal distances from

its edges; the upper one about a fifth part of the length of the kite from the top, the lower hole rather more than the same distance above its extremity.

The last, and by far the most important point, was to make the loop in the *belly-band*. If the kite be accurately constructed, its proper place may be easily found by extending the band, right or left, on the surface of the kite, and then marking the string at a point which lies in a line drawn from one end of the bow to the other; the loop must be made a little above such a point. If the kite be now suspended by this loop, the two ends of the bow ought to preserve a balance, and the lower extremity should dip below the upper part of the kite.

As Louisa observed the extreme care with which her father adjusted this part of the machine, she enquired into its use.

“I was myself about to put the same question,” said her mother; “for its adjustment would appear to require as much accuracy as that of the sash of a girl of sixteen.”

Mr. Seymour informed them, they would hereafter find that the steady ascent of the kite into the air entirely depended upon such ac-



curacy. "Have you not seen, Tom," asked he, "a kite rise sideways, or *plunge*, as it is called?"

Tom said he had often experienced that difficulty at school, but that he had attributed it to some defect in the tail.

"An error in the construction of the tail may, certainly, be occasionally the cause of such an accident, but it is more generally referrible to an improper position of the loop: if the kite *plunges*, you may conclude that this loop is placed too high; and should it whirl round in the air, you may infer that it is too low."

During this conversation, Mr. Twaddleton entered the apartment; Tom was anxious to show him his newly constructed kite, and while the party were asking him numerous questions, Mr. Seymour observed, that the vicar would be more profitably employed in making *bobs* for stringing the tail, than in finding answers for their string of questions.

Mrs. Seymour and her daughters, with Tom and the vicar, were, accordingly, placed round the table, for the purpose of carrying this project into effect, by a suitable division of labour.

It was arranged that Mrs. Seymour should cut the paper, the vicar fold it, and Mr. Seymour tie it on the string.

“How long ought the tail to be?” asked Tom.

“And of what shape should the papers be cut?” enquired Louisa.

“And at what distances are they to be placed from each other on the string?” said Mrs. Seymour.

“I will answer all your queries,” replied the father, “by giving you a dissertation upon this part of our machine.”

“We shall now have an harangue,” exclaimed the vicar, “as long as the tail itself; but pray proceed.”

“The tail should never be less than twelve, and should it even amount to twenty times the length of the kite, its appearance in the air will be more graceful; this, however, must be regulated by the weight of the string, and by the length and thickness of the pieces of paper of which the tail is composed. The length of each ought to be about three inches and a quarter, and an inch and a half in breadth, and it should be folded four times longitudinally; each of

these *bobs*, as they are called, must be placed at regular intervals of three inches."

"And with respect to the size of the wings?" asked the vicar.

"I should not recommend any wings; if the kite be well made, there cannot be any advantage from such appendages. Having now answered your several questions, let us proceed with our work.

"But where is the paper?" asked Mrs. Seymour.

"Apropos," answered her husband; "the box in which the London toys were packed contains a quantity that will answer our purpose."

The box was accordingly placed on the table.

"Why, what a most extraordinary miscellany!" cried the vicar; "an *olla podrida* in the very first style of extravagance. I perceive," added he, as his enquiring eyes glanced from sheet to sheet, "we have here a fragment of almost every description of literary and scientific works."

"The market," observed Mr. Seymour, "is supplied with waste paper from the catacombs

of Paternoster Row, which may be truly said to ‘level all earthly distinctions.’ Without intending any offence by a pun, my good vicar, what a *tale* will this box unfold ! I never open a magazine of this waste paper, without feeling a deep sympathy for the melancholy fate of authors : to see the strange transmigrations, and vile purposes, to which their works are destined, is really heart-rending. That the *lights* of science should be consigned to the tallow-chandler ! the works of the moralist, so well calculated to *purify* the world, to the soap-seller ! that such a book as ‘Laennec on the *Chest*,’ with Dr. Forbes’s valuable *Cases* in the bargain, should be *packed* off to the *trunk*-maker ! are events which cannot fail to furnish food for melancholy reflection. Nay, more, I have myself (can you believe it, Mr. Twaddleton?) actually received a quantity of *ureic* acid in a Review of Dr. Thomson’s Chemistry ! and I only yesterday learned, with horror, that a piece of fat bacon was positively wrapped up in a page of ‘Paris on Diet ;’ while a Cheshire cheese came encased in Kitchener’s ‘Chart of the Moon.’”

“ Oh, shameful ! shameful !! ” exclaimed the



vicar : “ but I can assure you, that this unfeeling conduct of the publisher had not escaped my notice and indignation ; for I lately received a work against the slave-trade, in the fragment of a tract on ‘ the Progress of Cant ; ’ and a copy of Irving’s Orations, in an act of ‘ Much Ado about Nothing ; ’ and what was still worse,” continued the reverend divine, “ a little work on the Art of Prognosticating the Weather, was forwarded to me in a chapter of *Daniel’s* Prophecies.”

“ These publishers must be exposed and punished, my dear Mr. Twaddleton ; it would really be no more than a just retribution, were we authors to raise a fund, in order to purchase their works, and then to consign them to the flames.”

“ Why, truly, such a scheme would be classical ; to consume the dead on the pile, instead of consigning them to the catacombs,” replied the vicar.

“ But let us quit these melancholy reflections for the present, and proceed with our occupation.”

“ If you compose the tail of your kite with these papers,” said the vicar, “ it will certainly

vie with that of Scriblerus himself; you will have a knot of divinity, — a knot of physic, — a knot of logic, — a knot of philosophy, — a knot of poetry, — and a knot of history.”

“ Never mind, my dear sir; you well know that I am no gamester, but yet, upon this occasion, will I wager an edition of Virgil, that I shall be able to discover in each page, with which you may present me, some apposite allusion to the *tail*, of which it is to form a part.”

“ Apposite allusion! impossible; as well might you attempt to connect the scattered leaves of the Sibyl: for example, here is an Epitome of the Roman History.”

“ Very well,” said Mr. Seymour, “and pray is not that *curtail*?”

The vicar dropped the paper in dismay; the treacherous design of his friend now, for the first time, flashed across his brain with a painful conviction, and he hastily retreated to a distant corner of the library, in order that he might find shelter from the pelting of a pitiless storm of puns, which he saw, too clearly, was about to burst on his devoted head.

On the vicar’s retiring from the table, Mrs. Seymour approached the fatal box, observing,

“that it was now her turn to explore the Sibylline cave.”

“Here,” said she, “is a list of the prices of some newly published works.”

“That,” replied her husband, as he cast a sly glance at the vicar, “is *retail*; pray, proceed.”

“We have next, I perceive, a prospectus for publishing all the speeches in the late parliament.”

“That is *detail*.”

Here a deep groan from Mr. Twaddleton arrested the progress of the proceedings, and threw the whole party into a continued fit of laughter. As soon as tranquillity was restored, Mrs. Seymour again dipped her hand into the box, and drew forth the fragments of a work on Real Property.

“That,” said Mr. Seymour, “is *entail*; pray, *cut it off*, and give it to me.”

“We have here,” continued the lady, “the *Memoirs of an Italian Bandit*.”

“Then prepare him for his fate; I have a noose quite ready for his reception.”

“Here is a poem, entitled *Waterloo*.”

“I will patronise it,” said her husband;

“and I warrant you that, under my auspices, the muse will soar to a greater height than she ever could otherwise have attained.”

Thus did Mr. and Mrs. Seymour proceed; the one cutting paper, the other cutting jokes; nor did the former cease stringing puns, until he had finished stringing the tail.

“I must now conclude by making a knot that shall not be in danger of becoming untied in the breeze,” said Mr. Seymour: “but stop, stop one moment; I still require one more piece of paper to complete my task, and let it be double.”

“Here then is a piece of paper, which, from its texture, appears to be well adapted to your purpose. Let me see, what is it? I declare, it is the titlepage of an Essay on Matrimony.”

“Capital!” cried her husband; “a strange coincidence, truly; you have, indeed, furnished me with a knot that cannot be easily untied, however stiff may be the breeze; hand it over to me, for it will afford a very legitimate finish, and is generally the conclusion of every *tale*: but where is the vicar? What, ho! Mr. Twadleton.”

The reverend gentleman had so contrived to



conceal his person in the corner of the room, behind a large folio which he had placed on a desk before him, that several moments elapsed before he was discovered ; at length, however, a long drawn sigh betrayed him in his retreat.

“ Upon my word,” exclaimed he, as he pushed aside the huge folio, “ your volatility, Mr. Seymour, is wholly inconsistent with the character of a scientific instructor.”

“ But, at present,” replied Mr. Seymour, “ I am engaged as the manufacturer of a kite’s tail ; and, surely, *flightiness* ought not, upon such an occasion, to be urged to my disparagement : but honestly confess that I have fairly redeemed my pledge.”

“ Well, well ; say no more upon the subject ; be silent, and I will acknowledge myself your debtor.

“ ‘ Est et fideli tuta silentio  
Merces :’

as Horace has it.”

“ And you are already beginning to pay me off in instalments,” said Mr. Seymour, “ drawn as usual upon the classic *banks* of the Tiber.”

The party, shortly after this discussion, separated : Mr. Seymour retired to his own room ;

the vicar proceeded to the church to bury a patient of Doseall's; and the children ran into the garden to enjoy their rural sports.

On the following day, before the wings of the lark had brushed away the morning dew, had Tom and his sisters, buoyant with expectation, descended into the garden, in order to ascertain the state of the weather, and the direction of the wind; but the sky was sad and calm, not a breath disturbed the susceptible leaves of the aspen; all was repose — “a dread repose.”

“No kite-day this,” sighed Tom, with a countenance as lowering as the morning clouds.

“Have patience,” said Louisa; “the wind may yet rise, it is only just six o'clock.”

Thus did the minds of the children continue to hover between hope and despair, until after breakfast, when they determined to seek the gardener, and hold a grave consultation with that acknowledged judge of the elements; he told them that showers might be expected, but he thought it probable that the wind might rise after mid-day. “I will, however,” said he, “consult my oracles (6); after which, I shall be able to give you a satisfactory opinion.” So saying, he left them; and, on his return, ob-

served that “ as the *Siberian sow-thistle* had closed itself the preceding evening, and the *African marigold* continued shut after seven o’clock in the morning, he had thought there would be rain ; but,” he added, that “ upon inspecting the *poor-man’s weather-glass*, the *Anagallis arvensis*, or *red pimpernell*, two hours ago, he had found it open, from which he concluded that the day would have been fine.”

“ There, Louisa ; it will be a fine day, after all,” exclaimed her delighted brother.

“ No, indeed,” continued the gardener ; “ on returning just now to the flower, which never deceives us, I found it had closed itself, so that rain is inevitable.”

Nor was this opinion erroneous ; for before the brother and sister could reach the lodge, the heavy ‘clouds began to discharge their watery burthen, and the rain continued in one incessant shower for more than two hours ; it then gradually abated, and the children, who had been anxiously watching it at the library window, were suddenly relieved from their anxiety by the appearance of the vicar, whom they espied slowly winding his way through the dripping shrubbery.

“ ‘Heu! quianam tanti cinxerunt æthera nimbi?’ as Virgil has it,” exclaimed the vicar, as he approached the portico, where Mr. Seymour and his family had assembled to salute him.

“We are under the influence of St. Swithin, vicar,” said Mrs. Seymour, “and I fear there is but slender hope of its becoming fair.”

“Psha! who cares for St. Swithin? (7) My barometer is rising rapidly, and I place more confidence in that classical deity, Mercury, than in a saint of so very questionable a character.”

At this moment, Phœbus, as if delighted by the compliment thus bestowed upon his heathen brother, cast a sly glance from behind a dark cloud, and illumined the spot upon which the vicar was standing. In short, after the lapse of half an hour, the sun broke through the gloom, and a brisk gale followed; the countenances of the children sympathised with the face of the heavens, and the expression of hope lighted them up, in proportion as the sun illumined the departing clouds with its radiance.

“It is now quite fair, papa,” cried Tom, in a voice of triumph, “and there is a most delightful wind; shall we not proceed at once to the common?”



“ Presently,” answered his father; “ the ground is yet extremely wet.”

In the course of an hour this objection had been removed, and the party prepared to set off on their kite-flying expedition.

“ Bring me the kite, and let me sling it properly over Tom’s shoulder,” said Mr. Seymour.

“ I will carry the string,” exclaimed Louisa; “ how nicely it is wound round the stick.”

As the party walked forwards, the vicar asked Tom whether he knew from whence the name of the *kite* originated.

“ A kite is a bird of prey,” answered the boy, “ which soars to a great height; and, from remaining stationary in the air, was, I suppose, thought to resemble the paper kite.”

“ That is a very good explanation,” said the vicar; “ or it may, perhaps, have derived its name from the circumstance of its having been originally constructed in the shape of a bird of this description. In China the flying of kites is much more practised than in this country; and I understand that their shape is always that of some bird.”

“ In the London toy-shops you may constantly meet with them in such forms, as well as in

many other fantastic shapes," observed Mr. Seymour; "and," continued he, "I remember to have seen, some years ago, a kite which resembled a man. It was made of linen cloth, cut, and painted for the purpose, and stretched on a light frame, so constructed as to resemble the outline of the human figure. It stood upright, and was dressed in a sort of jacket. Its arms were disposed like handles on each side of its body, and its head being covered with a cap, terminating in an angle, favoured the ascent of the machine, which was twelve feet in height; but to render it easier to be transported, it could be folded double, by means of hinges adapted to the frame. The person who directed this kind of kite was able to raise it, though the weather was calm, to the height of nearly five hundred feet; and, when once raised, he maintained it in the air by giving only a slight motion to the string. The figure, by these means, acquired a kind of libration, like that of a man skaiting on the ice. The illusion, occasioned by this spectacle, did not fail, as you may readily suppose, to attract a great number of spectators."

"I believe, however," observed the vicar,

“ that the figure commonly adopted, is the one best calculated for the purpose.”

“ Undoubtedly,” replied Mr. Seymour, “ and for obvious reasons ; the curvature of the bow enables it to escape the resistance of the air, as it rises ; which, after having struck it, slides off, just as the current is more effectually turned aside by the gently curved prow, than by that which has a sharp outline ; for the same reason, the mast of a ship, though it has a conical shape, is more easily drawn through the water with its broad, than with its narrow end, foremost ; for although the primary obstruction is, no doubt, greater in the former case, yet the water heaped, as it were, on the front, is made to stream off with a slight divergency, and therefore does not hang on the sides of the mast, as it would in the latter case. This shape of the kite, moreover, presents the largest surface at the point upon which the wind can act with the greatest effect, while the whole is lightened by the removal of parts that would obstruct its action. The tail has also a greater control over a figure of such a description.”

Mr. Seymour asked the vicar, “ whether he could explain the origin of the French term for

the kite, viz. *cerf volant*, or flying stag; I never can believe," continued he, "that the kite could ever have been constructed in the shape of that animal."

"I am unable to clear up the difficulty," replied the vicar; "and yet I have taken some pains upon the subject. The earliest notice of the kite, which I have been able to discover, is in a short English and French Dictionary, by Miege, which was published in the year 1690, and it is there described under the name of *cerf volant*."

"I wonder," cried Tom, "who invented the kite."

"In that again," answered Mr. Twaddleton, "I am unable to furnish you with any satisfactory information. The pastime appears to have been of very ancient date in China, and was, probably, first imported into Europe from that country."

"At what period, do you suppose?"

"Strutt, who was very assiduous and correct in all his antiquarian researches, was of opinion that its introduction into England could not be dated farther back than a hundred and fifty years."

The party had, by this time, reached Overton heath; the weather was favourable; and the kite impatiently fluttered in the breeze, while Tom was eagerly engaged in unwinding its streaming tail, and preparing the paper machine for ascent.

“Is the string fixed to the belly-band?” asked Mr. Seymour.

“All is ready,” replied the vicar; “and I will hold it up, while Tom runs with it against the wind.”

“There is not the least occasion to raise the kite from the ground,” observed Mr. Seymour; “let its point rest on the grass, and place its tail in a straight line in front of it; I warrant you it will rise, as soon as Tom begins to run.”

Tom immediately set off, and the kite rose majestically into the air.

“Give it string — give it string — gently, gently — now stop; there is no occasion for your running any farther, but let out the cord, as long as the kite carries it off vigorously, and keeps it fully stretched; but wind it up the moment its tension is relaxed.”

“It is rising very fast,” cried the breathless boy, “but the string burns my hand as it passes



through it; I shall not be able to endure the heat."

"Be patient, and let it pass more slowly; put on your glove," said his father.

"Ay, ay; put on your glove," repeated the vicar; "even Xenophon himself, who declaimed so warmly against the effeminacy of the Persians, for wearing gloves, would scarcely have refused his consent to their use on such an occasion."

"What is it that produces so much heat?" enquired Louisa.

"The friction of the string," replied her father. "Do you not know that carriages frequently catch fire from the friction of their wheels, unless it be prevented by the application of grease?"

"Yes," said Tom; "and I have heard that the natives of some countries kindle their fires by rubbing pieces of wood together."

"The original inhabitants of the new world," observed his father, "throughout the whole extent from Patagonia to Greenland, procured fire by rubbing pieces of hard and dry wood against each other, until they emitted sparks, or burst into flame; some of the people to the north of California produced the same

effect by inserting a kind of pivot in the hole of a very thick plank, and causing it to revolve with extreme rapidity : the same principle will explain how immense forests can have been consumed ; for it is evident, that the violent friction of the branches against each other, from the agitation of the wind, would be fully adequate to the production of such an effect."

" You have also an excellent example of the effect of friction in producing heat," said the vicar, " in the history of the whale fishery ; for, in harpooning the fish, unless the sailors observe the greatest caution in letting out the rope, its friction upon the side of their boat will be sure to set it on fire."

" And how do they manage it ?" asked Louisa.

" As soon as the whale makes off, after having been wounded, it draws out the line or cord of the harpoon, which is coiled up in the boat, with very considerable velocity. In order, therefore, to prevent any accident from the violence of this motion, one man is stationed with an axe to cut it asunder, if it should become entangled ; while another, with a mop, is con-

stantly cooling with water the channel through which it passes."

"The kite is now at a considerable height," observed Tom; "but look at the string, how bent it is! I have repeatedly endeavoured to pull it straight, but without success."

"How could you have expected to succeed in the attempt? Consider the weight of such a long line of string."

"Then it is not the pressure of the atmosphere which gives it that curved form?"

"Assuredly not: have you so soon forgotten that the air presses equally in all directions, and would therefore tend to straighten, as much as to give a curved direction to the string? But, as you now appear to have let out the whole of your string, suppose you allow the kite to enjoy its airing, while we proceed to consider the philosophy of its ascent, and the nature and direction of those forces by which it is effected."

"The kite pulls so amazingly hard," cried Tom, "that unless I fix the string securely around the tree, we shall run the chance of losing it."

"I am well aware of the force it exerts," replied his father. "Dr. Franklin has said, that,

with a good kite, a man unable to swim might be sustained in the water, so as to pass from Dover to Calais; but I agree with him in thinking, that a packet would be a much safer, as well as a pleasanter mode of conveyance."

"We have lately heard of a person having travelled many miles along the road in a carriage drawn by two kites," said the vicar.

"It is perfectly true; and as it would be difficult to manage a single kite at any considerable altitude, the force was obtained by two at a less elevation."

"I thank you for that explanation; for I was puzzled to discover the motive in employing two kites on that occasion," said Mr. Twaddleton: "but let me beg you to proceed with your theory of the kite's ascent into the air; I suspect that you will find the subject much more complicated than you imagine."

"Not at all; Tom, who, I trust, has a perfect acquaintance with the composition and resolution of forces, will very readily understand the explanation I propose to offer. I admit, however, that there are some few points in the enquiry, which cannot be successfully treated without a knowledge of the higher branches of

the mathematics ; but I shall, of course, avoid all such difficulties.\* Can you tell me, Tom, what advantage is gained by your running with the kite ?”

“ I suppose that you thus obtain more force from the wind.”

“ Certainly ; action and reaction are equal. By running, therefore, with your kite against the wind, you strike the air, and thus produce a reaction, which is equal to the force of the blow given to it. When the wind is high, and its action is not intercepted by surrounding objects, there cannot exist any necessity for such an expedient.”

“ The principle is the same as that which enables the bird to rise into the air by flapping its wings,” observed the vicar.

“ Unquestionably,” replied Mr. Seymour.

“ Does the kite then rise in the air, from the same causes that enable a bird to fly ?” asked Tom.

“ We are not, at present, considering the

\* Those readers, who are inclined to enter more deeply into the subject, may consult, with advantage, a memoir on the kite, by Euler, published in the Transactions of the Academy of Berlin for the year 1756.



ascent of the kite, but the advantage which is obtained by running with it ; this latter, as the vicar has properly observed, undoubtedly depends upon the same principle as that which enables the bird to rise, by the motion of its wings, and which constitutes the third law of motion\*, viz. that *action and reaction are equal* ; that is to say, whenever one body exerts a force upon another, the second body opposes the first, with equal force, in an opposite direction. If, then, the bird strikes the air below it with a force which is equal to its weight, then must there be a reaction of the air, upwards, exactly equal to it ; and the bird, being acted upon by two equal forces, in opposite directions, will, necessarily, rest between them."

" That is clear enough ; but the bird *rises*," answered Tom.

" Because the force of the stroke is *greater* than the weight of the bird, and it therefore rises with the *difference* of these two forces ; were the stroke *less* than its weight, then would it sink with the difference. Suppose, for example, a bird weighs *twelve* ounces, and it strikes the air with a force equal to *sixteen*, is it not

\* See Vol. I. p. 115.

clear that it must rise with a force equal to *four*? and is it not evident that, if it strikes the air with a force equal only to *eight*, that it must sink with a force equal to *four*?”

“ I understand it perfectly ; flying appears to be a very simple process ; it would, surely, be an easy matter to contrive some sort of flapper, by which we might all be able to rise into the air,” said Tom.

“ Your opinion, my dear boy, is by no means singular ; hundreds have entertained the same belief before you ; and so confident was the famous Bishop Wilkins, that he declared it to be his conviction, that, in future ages, it will be as usual to hear a man call for his wings, as it is now to call for his boots.”

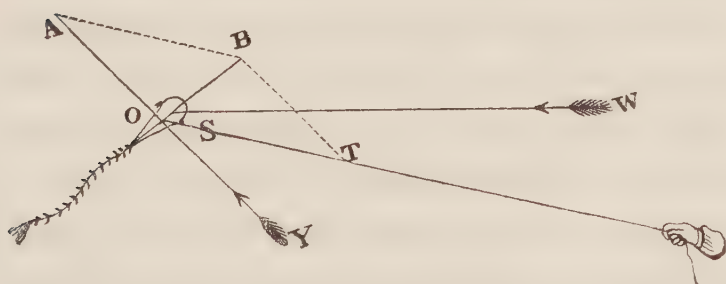
“ I do not see the difficulty,” exclaimed Tom.

“ The weight of our bodies is so great, that we have not sufficient muscular strength to impart a blow to the air that shall be equal to it. Now are you satisfied ?” said his father.

“ I am perfectly satisfied, if such be the case, that we can never hope to fly.”

“ Let us then return to the subject of the kite ; for, as yet, we have merely considered the effect

of increasing the wind upon its surface; we have next to enquire how the wind operates in raising it into the air. — Do you not remember, when I adjusted the noose in the belly-band, I stated that much depended upon this part of the apparatus? You will, at once, perceive that it will influence the angle which the kite forms with the earth, and I am about to prove to you, that the theory of the kite's ascent is materially connected with the value of this angle; but, in order to render my explanation intelligible, I have prepared a diagram, to which I am desirous of directing your attention.



“ The kite here appears in the act of rising from the ground; the line w will represent the direction of the wind blowing upon it, all the currents of which we will suppose united in

one ; it is evident, from what has been already stated, that as it falls upon an oblique surface, it will be resolved into two forces, viz. into one parallel with it, and into another perpendicular to that surface ; of which the force represented by the line  $Y$  will alone produce any effect, carrying the kite along the line  $OA$ , or in a direction parallel to itself ; and you must have observed that this was the direction in which the kite was impelled, when you suffered it to rise, without checking its progress by the string."

" I remember that well," said Tom ; " and I also observed that, when I pulled my string, the kite immediately rose more perpendicularly."

" To be sure it did ; because, by that operation, you called a new force into action ; which I have represented in the diagram by the line  $ST$ . The kite was therefore under the influence of the two forces  $OA$  and  $ST$ , and, since these are in the direction of the two sides of a parallelogram, it would not obey either, but ascend through  $OB$ , its diagonal."

" Notwithstanding Mr. Twaddleton's doubts upon the subject," said Tom, " I am sure that I perfectly understand your explanation ; and I think I may also answer for my sister : but

you have not yet told us any thing about the tail; I suppose, however, that it acts like the rudder of a ship, or the tail of a bird."

"Before I answer that question, let me inform you that the tail of a bird has not the least resemblance, in its action or uses, to the rudder of a ship."

"I always, thought," said Tom, with some surprise, "that the bird was enabled to direct the course of its flight by the motion of its tail."

"That is a popular, but very erroneous opinion," replied his father: "the tail cannot perform the office of a rudder, since it never changes its situation with the direction of the bird, as the rudder does with that of the ship. Its principal use seems to be to keep its body poised, and upright."

"How, then, is the bird enabled to alter the course of its flight?" asked Louisa.

"It can easily turn, either to the right or left," answered Mr. Seymour, "by flapping the opposite wing with increased force, just as a boat is turned about to the right, by a brisk application of the left oar."

"But you have not yet answered Tom's question," said the vicar. "Of what use is the



tail of the kite? Does it assist its ascent, or is it merely an appendage of ornament?"

"In the first place, it keeps the head of the kite to the wind; and, in the next, it lowers its centre of gravity, and throws it towards its extremity, which not only prevents the chance of the machine being upset in the air, but so poises and regulates the position of the kite as to maintain the angle which it is necessary for the string to make with the surface."

Mr. Twaddleton here enquired what might be the most advantageous angle for the kite to form with the horizon, in order that the paper machine should rise to the greatest altitude.

"If the wind be horizontal," answered Mr. Seymour, "it is evident that the inclination of the kite's surface ought to be the same, as that which the rudder of a ship should make with the keel, in order that the vessel may be turned with the greatest facility; supposing the currents of water, which impel it, to have a direction parallel to the keel."

"And what ought that angle to be?" enquired the vicar.

"*Fifty-four degrees, and forty-four minutes,*" replied Mr. Seymour.

Tom here interrupted the dialogue, by expressing a regret that he should have been provided with so small a quantity of cord.

“ I do not believe, my dear boy, that any advantage could be gained by an additional quantity of string,” said his father.

“ Is there, then, any reason why the kite should not ascend, even above the clouds, provided that my string were sufficiently long and strong ?”

“ Yes ; indeed is there a most unanswerable reason. Remember that the kite is made to rise by the operation of two forces ; the one afforded by the wind, the other by the action of the string : now it is quite evident that, when the weight of the string, added to that of the kite itself, becomes equal to the force of the wind, acting upon the surface of the machine, a general balance, or equilibrium, of forces will be established, and the kite can no longer continue to ascend.”

“ Will it, then, remain stationary under these circumstances ?” asked Louisa.

“ It must do so, unless the force of the wind should abate ; for it is a proposition in mechanics, which I shall hereafter endeavour to de-

monstrate (8), that, if a body be acted upon by three forces, which are proportional to, and in the direction of, the three sides of a triangle, it will be kept at rest. The kite is exactly in this predicament, for its weight, the force of the wind, and the action of the string, fulfil these conditions, and consequently keep the kite stationary."

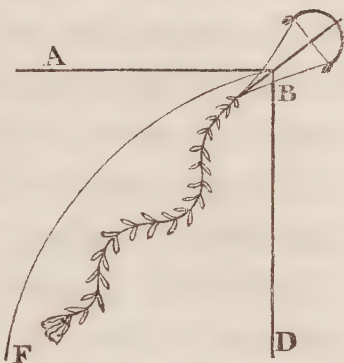
" But, if the twine should snap ?" said Tom.

" Then one of these three forces would be withdrawn, and the kite could no longer be sustained."

" I trust that such an accident is not likely to happen ; but, if it should, we could easily recover the kite, that is one good thing ; for it is hovering over the open field at the end of the heath."

" If you imagine that the kite, under such circumstances, would fall upon the spot directly under it, you are terribly deceived : recollect that, if the string should snap, the kite would be abandoned to two forces, those of the wind, and its own gravity ; and you will perceive that, under such circumstances, it could not obey either of them, but would fall in an intermediate or diagonal direction. This fact will be ren-

dered apparent by the annexed diagram.  $BA$  may be supposed to represent the force and direction of the wind acting upon the kite, and  $BD$  those of its gravity; then it is evident that, under the influence of these joint forces, it would describe the diagonal, and, for reasons already explained, that line must necessarily be the *curve*  $BF$ ."



"Come," said the vicar, "before Tom draws down his kite, let us send up a *messenger*."

"What may that be?" asked Louisa.

"A piece of paper or pasteboard, which, on being introduced upon the string, is blown along the line up to the kite."

The *messenger* was accordingly prepared, and being placed upon the string, it ascended as Mr. Seymour had anticipated. While this operation was in progress, the vicar stood earnestly gazing upon the kite, and, at length, burst forth in the following animated soliloquy:—

"Assuredly, this must be acknowledged as a most beautiful and imposing toy! Fastidious or

insensible must be that person, who does not feel exhilarated as he gazes on the kite, proudly floating under the canopy of heaven, and reflecting the departing smiles of the evening sun, after it has ceased to cheer us below."

"Has the kite ever been applied to any useful purposes?" asked Tom.

"Certainly," answered his father. "It was by means of the kite that Dr. Franklin was enabled to demonstrate the identity of electricity and the cause of lightning, and thus to disclose one of the most awful mysteries of nature."

"Pray do tell us something about this electrical kite, papa," said Louisa.

"Not at present, my love; it would divert us too much from the subjects in which we are engaged: at some future period I shall have much pleasure in introducing you into these fairy regions of philosophy."

"I just now remember reading in Miss Edgeworth's *Harry and Lucy*," said Louisa, "something about a kite and Pompey's pillar."

"I am glad that you have reminded me of that story," replied Mr. Seymour: "I will relate it to you. Some English sailors laid a wager, that they would drink a bowl of punch



on the summit of Pompey's pillar. Now, that pillar is almost a hundred feet high, and it is quite smooth, so that there was no way of climbing to the top, even for sailors, who are such experienced climbers; so they flew their kite exactly over the pillar, and when it came down on the opposite side, the string lay across the top of the capital. By means of this string, they pulled a small rope over, and by this a larger one, that was able to bear the weight of a man; a pulley was then fastened to the end of the large rope, and drawn close up to the upper edge of the capital; and then, you perceive, they could easily hoist each other up. They did more, for they hoisted the English flag on the top, and then drank the bowl of punch, and won their wager."

"That is a very good story," said the vicar; "but I cannot help regretting that so much ingenuity and labour should not have had a nobler end to accomplish."

"There is some truth in that observation," said Mr. Seymour, "and I will, therefore, relate another story which shall be more congenial to your heart, and in which the kite will present itself in a more interesting point of view;

for, instead of enabling the sailors to drink a bowl of punch at an altitude otherwise inaccessible, we shall find it engaged in rescuing them from the horrors of shipwreck.”\*

“ Pray proceed, papa.”

“ No, my dear, upon reflection, I think it will be better that we should postpone the story, until your return to the lodge, when you shall read the account in *Harry and Lucy*. I will also take that opportunity of showing you some experiments, in illustration of the nature of wind.”

“ Shall we not return immediately ?”

“ No, my dear ; it would not be in my power to attend you at present ; but join me in the library after dinner ; Mr. Twaddleton will now accompany me to the village, and do you remain and enjoy the amusement of your kite.”

So saying, the gentlemen departed. In their way to the village they met Tom Plank, apparently in a great state of agitation.

“ Why, Tom Plank, what, in the name of goodness, is the matter ?” exclaimed Mr. Seymour.

\* Transactions of the Society for the Encouragement of Arts, vol. xli.; and Miss Edgeworth’s *Harry and Lucy*, vol. iv. p. 288.

“The matter ! your worship ; matter enough, I think ; and, if there’s any law in the land, I’ll take it of that ungrateful rogue, Ned Hopkins, who has robbed me of thousands.”

“ Hey-day ! ” cried the vicar, “ robbed you of thousands ! Thousands of what ? of nails ? for I am quite sure that you never possessed a thousand groats in your life. Poor fellow, poor fellow ! this science has doubtless turned his head.”

“ Let us hear his story,” said Mr. Seymour.

“ Here’s my story,” replied the planer of deals, pulling a newspaper out of his pocket ; “ read — read.”

The vicar took the newspaper from his hand, and read the following paragraph :—“ We understand that a patent has been lately taken out by a Mr. Ned Hopkins, for a project for cheap and expeditious travelling, by means of an artificial current of air, which is to propel passengers and luggage through a tube or tunnel, at the rate of a hundred miles an hour. The principle of this invention appears to differ from that of a pop-gun, as the body is to be shot on by the exhaustion of the air, instead of by the condensation of it. The advertisement, which is to be

found in another column of our paper, will explain more fully the claims which this truly scientific invention possesses to public patronage; and we heartily congratulate the invalid on a plan which will enable him, in future, to travel to Brighton with the wind at his back. It is expected that this new channel of communication between London and Brighton will be opened on the first of October next, and those who are desirous of taking places are requested to book their names at ‘The Swan with Two Necks.’ ”

“ Well, it must be acknowledged,” said Mr. Seymour, “ that the sign of the inn is strikingly expressive of the uncommon personal endowments essentially necessary to the traveller who trusts himself to this mode of conveyance.”

The vicar proceeded :—“ Those who are desirous of taking places at Brighton, must apply at the Tierney Arms. N. B. Private breezes between two and four o’clock will be provided at a few hours’ notice; those who are desirous of travelling by a hurricane are requested to give not less than a day’s notice.”

“ There,” cried Plank; “ you now see the villany of that fellow Hopkins. Was ever man

so used before ! It's my own invention, gentlemen, that the rogue has stolen from me, and which he has the audacity to publish to the world as his own ; he will, no doubt, make a very large fortune by it."

" Come, my good friend," said the vicar, as he returned the newspaper ; " let Ned Hopkins profit, if he can, by his speculation ; I will make you quite easy upon that subject, for I hereby promise, and Mr. Seymour shall be our witness, that I will secure to you double the amount which Ned Hopkins may realise by his project ; upon one condition, that, should it fail, you will return, like an industrious mechanic, to your calling, and, instead of building castles in the air, resume the more useful occupation of repairing cottages on the earth."

At this assurance the countenance of the carpenter brightened ; although he " could not forgive," as he said, " the dark ingratitude of Ned Hopkins, who came to him as a person quite ignorant of philosophy, but begging to learn something about it, and under this pretence he — he —"

" He sucked your brains," said the vicar. " Well, well, be consoled ; greater philosophers



have suffered from similar depredations; ‘*Sic vos, non vobis*,’ as the poet has it; although I confess that such treachery is very mortifying. Tom Plank’s story,” continued Mr. Twaddleton, “reminds me of the classic fable of Ætatus and Polyclea, and which he is at liberty, if he pleases, to publish in the weekly paper, as a wholesome warning to all those who are engaged in scientific researches. An oracle having declared that whoever of the two persons above-mentioned should first touch the land, after crossing the Achelous, should obtain the kingdom; Polyclea pretended to be lame, and prevailed upon her brother to carry her across on his shoulders. When they came near the opposite side, Polyclea leaped ashore, from the back of Ætatus, exclaiming that the kingdom was her own.”

The party now separated in perfect good humour; the vicar, with the aptness of his classical illustration; the carpenter with the assurance of doubling the amount of his calculated profits; and Mr. Seymour, with the diversions of the morning, which had blended so much amusement and instruction for the benefit of his

children, to whose welfare and happiness he was entirely devoted.

It was not until the evening, that Tom and his sisters requested their father to fulfil the promises he had made them in the morning.

“You told us,” said Louisa, “that you would give us some information about the wind; the subject has been puzzling me ever since, for I cannot make out the cause of it.”

“Wind, my love, is nothing more than air in motion; and is produced by a large volume of it flowing in a current, or stream, from one place, or region, to another, and with different velocities.”

“And what can produce these currents?” asked Tom.

“After the explanation of the action of the pump, I do not think that I shall have much difficulty in making you understand the nature of the operations by which wind is occasioned. Suppose a partial vacuum should be formed in any region, would not the neighbouring air immediately rush in to supply the deficiency and restore the balance?”

“Undoubtedly; from the pressure of the air behind it.”

“Heat,” continued Mr. Seymour, “will produce a partial vacuum, by rarefying the air, and thus rendering it lighter; in consequence of which, it will ascend, and the colder air will rush in to supply its place.”

“I do not exactly see why the rarefied air should ascend,” observed Louisa. “It appears to offer an exception to the general law of gravity.”

“Not at all; on the contrary, its ascent is occasioned by the force of gravity; in the first place, however, to prove the fact that heated air does actually ascend, we have only to observe the direction of smoke, as it issues from the chimney; this consists of minute particles of fuel carried up, by a current of heated air, from the fire below; and, as soon as this current is cooled by mixing with that of the atmosphere, the minute particles of coal fall, and produce the small black flakes which render the air, and every thing in contact with it, so dirty in a populous city.”

“But I want to know, papa, what it is which causes the hot air to ascend?”

“The greater weight of the cold air above it, which gets, as it were, beneath the lighter air, and obliges it to rise; just in the same way as a

piece of cork, at the bottom of an empty vessel, is made to rise to the surface of the water which may be poured into it."

"Now I understand it; pray, therefore, proceed with your account of the wind. You have just said that heat rarefies the air, and causes it to ascend."

"And thus produces a current of air, or a *wind*."

"Is heat, then, the cause of wind, papa?" asked Tom.

"It is one great cause; but there are, probably, several others; I will, however, exemplify this subject by an experiment."

So saying, Mr. Seymour produced a water-plate, a large dish, and a jug filled with cold water. The bell was rung, and the servant entered with a tea-kettle of boiling water.

The large dish was then filled with the cold, and the water-plate with the boiling fluid.

"Let this large dish represent the ocean," said Mr. Seymour, "and this water-plate, which I will now place in its centre, an island in that ocean; for the land, from receiving the rays of the sun, will be more heated than the water,

and will consequently rarefy the air above it.—  
Now, Tom, light me the wax taper.”

“ I have done so.”

“ Then now blow it out.”

“ I cannot imagine what you are about, papa; — ‘ Light the candle, and then blow it out !’ — but it still smokes, shall I put the extinguisher over it ?”

“ By no means; give it to me, and observe what will happen when I carry it round the edge of the dish.”

“ The smoke goes to the centre,” exclaimed Tom.

“ Showing, thereby, the existence of a current towards the water-plate, or island; in consequence of the air above it having been heated, and therefore rarefied. This explains, in a very satisfactory manner, a fact which may be constantly observed in our own climate, viz. a gentle breeze blowing from the sea to the land in the heat of the day. Upon the same principle it is, that most of the winds in different parts of the globe may be readily accounted for.” (9)

“ I suppose,” said Tom, “ that the air must



rush with great velocity, in order to produce wind."

"A very general error prevails upon this subject," replied his father; "the rate of motion has been greatly exaggerated. In a brisk gale, even, the wind does not travel with such velocity, but that it may be easily traced by the eye; and the sailor is able to watch its progress by the ripple which it produces on the sea."

"Has, then, the rate of its motion ever been estimated?" asked Louisa.

"When its velocity is about two miles per hour, it is only just perceptible. In a high wind, the air travels thirty or forty miles in the same period. In a storm, its rate has been computed as being from sixty to eighty miles. It has, also, been ascertained, by experiment, that the air, as it rushes from a pair of blacksmith's bellows, has not a velocity above that of five and forty miles in the hour."

"At what rate, should you think the air travelled this morning, when we flew our kite?" enquired Louisa.

"I should think at about five miles an hour, for it was a pleasant but gentle breeze."



## CHAP. V.

A SHORT DISCOURSE. — THE SHUTTLECOCK. — THE SOLUTION OF TWO PROBLEMS CONNECTED WITH ITS FLIGHT. — THE WINDMILL. — THE SMOKE-JACK. — A TOY CONSTRUCTED ON THE SAME PRINCIPLE. — THE BOW AND ARROW. — ARCHERY. — A DISCOVERY WHICH GREATLY DISCONCERTS THE VICAR.

**MR.** TWADDLETON, on his arrival at the lodge, on the following morning, informed the family that he had just received a letter from the major; who, he said, was at Holding's hotel, in Dover Street, anxiously waiting to complete his purchase of Osterley Park.

“ It is very extraordinary,” replied Mr. Seymour, “ that the major should have taken possession of the mansion before the execution of the necessary deeds : but what can occasion all this delay ? ”

“ Between ourselves, Mr. Seymour, Wilcox has far too great an influence over the major and his affairs. I see clearly, from the tenor of his letter, that the delays and difficulties have not originated with the agents of the worthy knight Sir Thomas. As to the policy of the major taking possession of the house, I know that he was enabled to do so with perfect security, by virtue of an agreement, to which I was a witness, that, should any insurmountable legal difficulty about the title arise, he should be considered as a tenant at a certain rent that was mutually agreed upon.”

“ Well ; I am, at all events, glad to find that we are not likely to lose the major as a neighbour.”

Mrs. Seymour now entered the room, holding in her hand a letter which she had just received from Miss Villers. — “ Isabella comes to us next Monday.”

“ Your account of that young lady,” observed

the vicar, "has greatly prepossessed me in her favour; I only hope that she is not too *blue*."

"I care not how blue the stockings of a lady may be," said Mr. Seymour, "'provided her petticoats be long enough to hide them;' and from my knowledge of Miss Villers, I can assure you, exalted as are her attainments, they are so veiled by feminine delicacy and reserve, that they may insidiously win, but will never extort our homage."

"Ay, ay," exclaimed the vicar; "I perfectly agree with you in your idea of feminine perfection — short tongues, and long petticoats, Mr. Seymour — but where are my little play-mates?"

"I left Tom and Fanny on the terrace, a short time since," replied Mr. Seymour, "very busily engaged in the game of shuttlecock and battledoor."

"The shuttlecock is an ancient sport," observed Mr. Twaddleton. "It is represented in a manuscript as far back as the fourteenth century; and it became a fashionable game amongst grown persons in the reign of James the First."

"It is a very healthy pastime," said Mr. Seymour, "and, in my opinion, is admirably



calculated for females ; for, it expands the chest, while it creates a graceful pliancy of the limbs."

" I entirely agree with you ; it is the only game with which I am acquainted, in which muscular exercise is gained without compromising gracefulness. But see, here come the two young rogues."

" Papa," exclaimed Tom, " I have been considering whether there is any philosophy in the game of shuttlecock."

" There are two circumstances connected with its flight," replied his father, " which certainly will admit of explanation upon scientific principles ; and I should much like to hear whether you can apply them for that purpose. The first is its spinning motion in the air ; the second, the regularity with which its base of cork always presents itself to the battledoor ; so that, after you have struck it, it turns round, and arrives at your sister's battledoor in a position to be again struck by her, and sent back to you."

" I perfectly understand what you mean ; but I really am not able to explain the motions to which you allude," said Tom.

" The revolution of the shuttlecock, about its axis, entirely depends upon the impulse of



the wind on the oblique surfaces of its feathers ; so that it is often necessary to trim the feathers of a new shuttlecock, before it will spin."

" I understand you, papa ; the force of the wind, by striking the oblique feathers, is resolved into a perpendicular and parallel force, as you explained to us, when we considered the action of the wind upon the kite."

" Exactly ; every oblique direction of a motion is the diagonal of a parallelogram, whose perpendicular and parallel directions are the two sides. Having settled this point, let us consider the second ; viz. how it happens that the cork of the shuttlecock always presents itself to the battledoor."

" I should think," said Tom, " that the cork points to the battledoor for the same reason that the weathercock always points to the wind."

" Admirably illustrated !" exclaimed his father ; " the cork will always go foremost ; because the air must exert a greater force over the lighter feathers, and therefore retard their progress. While we are upon this subject, I will introduce to your notice some contrivances which are indebted to this same principle for their operation. In the first place there is the

arrow ; can you tell me, Louisa, the use of the feathers which are placed round its extremity?"

" To make its head proceed foremost in the air, by rendering its other end lighter, and therefore more sensible to the resistance of the air," replied Louisa.

" Very well answered ; that is, unquestionably, one of the objects of the wings of an arrow ; but there is also another, that of *rifling* it, or steadying its progressive motion, by causing it to revolve around its axis. If you will look at this arrow, you will perceive that the feathers are placed nearly, but not quite, in planes passing through it ; if the feathers were exactly in this plane, the air could not strike against their surfaces when the arrow is in motion : but, since they are not perfectly straight, but always a little aslant, the air necessarily strikes them, as the arrow moves forward ; by which force the feathers are turned round, and with them the arrow or reed ; so that a motion is generated about its axis ; and its velocity will increase with the obliquity of the feathers. You will therefore observe that, in order to enable the feathers to offer a necessary resistance to the air, they must possess a certain degree of stiff-

ness or inflexibility. It was on this account that Roger Ascham\*, and other skilful artists in the days of archery, preferred the feathers of a goose of two or three years old, especially such as drop of themselves, for pluming the arrow ; and the importance, as well as the theory of this choice, is confirmed by a curious observation of Gervase Markham†, who says that ‘ the peacock feather was sometimes used at the short butt ; yet, seldom or ever, *did it keep the shaft either right or level !* ’ ” (10)

“ That is intelligible enough,” said Tom, “ the feather of the peacock must have been so flexible as to have yielded to the slightest breath of air ; and now, as we are upon the subject of the arrow, do explain to us the action of the bow.”

“ I shall readily comply with your request, before we part ; but I am desirous, at present, of following up the subject before us, and of taking into consideration some other instruments which owe their motions to the action of the air upon oblique surfaces.”

“ Suppose,” said the vicar, “ you explain to

\* Toxoph. ed. 1571. folio 166.

† Markham’s Art of Archerie, 1634.

them the action of the wind upon the sails of the mill."

" I should like to hear something about the windmill," observed Tom ; " and, perhaps, Mr. Twaddleton can tell us who invented the machine."

" The invention is not of very remote date," replied the vicar. " According to some authors, windmills were first used in France in the sixth century ; while others maintain that they were brought to Europe in the time of the crusades, and that they had long been employed in the East, where the scarcity of water precluded the application of that powerful agent to machinery."

" I had intended," said Mr. Seymour, " to have entered very fully upon the subject of the windmill ; for, although it is a very common machine, its construction is much more ingenious than is generally imagined ; it must also be allowed to have a degree of perfection, to which few of the popular engines have yet arrived : but to do ample justice to my subject, I should require several models which are not yet in readiness ; besides, Tom's holidays have nearly passed away ; I must therefore postpone

the examination of the mill to some future opportunity, and content myself, at present, with an explanation of its sails."

"And let me tell you," observed the vicar, "that if you succeed in this one object, you will accomplish a task which has occupied years of mechanical research. The angle which the surface of the sails ought to make with their axis, in order that the wind may have the greatest effect, or the degree of *weathering*, as the millwrights call it, is a matter of nice enquiry, and has much engaged the thoughts of the mathematicians."

"My remarks upon that subject will be very general," said Mr. Seymour; "I shall explain the principle, without entering into the minutiae of its applications. The vertical windmill, which is the kind in most common use, consists, as you well know, of an axis, or shaft, placed in the direction of the wind, and usually inclining a little upwards from the horizontal line. At one end of this, four long arms, or yards, are fixed perpendicular to the axis, and across each other at right angles; these afford a surface, on which a cloth can be spread to receive the action of the wind. To conceive why these sails should



revolve by the force of the wind, we must have recourse to the theory of compound motion. It is very evident that, if a mill exposed directly to the wind should have its four sails perpendicular to the common axis in which they are fitted, they would receive the wind perpendicularly, an impulse which could only tend to overturn them; there is a necessity, therefore, to have them oblique to the common axis, that they may receive the wind obliquely, when their effort to recede from it causes them to turn round with the axis; and the four sails being all made oblique in the same direction, thus unite their efforts for the common object."

"You have not yet told us what degree of obliquity the sail ought to make with the wind," said the vicar.

"The same as the kite ought to make, *fifty-four* degrees and *forty-four* minutes," replied Mr. Seymour.

"Do you not remember, papa, when we were last in London, you pointed out to us a curious mill on the banks of the river, which went without any sails?"

"You allude to the horizontal mill at Battersea."

“ I remember it was at Battersea,” observed Louisa; “ and I dare say, papa, that you recollect the strange story which the waterman, who rowed us down the river, told Tom and myself. He said ‘ that, when the Emperor of Russia was in London, he took a fancy to the neat little church at Battersea, and determined to carry it off to Russia; and that for this purpose he had sent a large packing-case; but, as the inhabitants refused to let the church be carried away, the case remained on the spot where it was deposited.’ ”

“ It is not a bad story,” said her father; “ for the mill certainly, both in size and figure, may be imagined to resemble a gigantic packing-case. The mill, of which you are speaking, was erected by Captain Hooper, who also built a similar one at Margate. It consists of a circular wheel, having large boards or vanes fixed parallel to its axis, and arranged at equal distances from each other. Upon these vanes the wind can act, so as to blow the wheel round; but if it were to act upon the vane at both sides of the wheel, at once, it is evident that it could not have any tendency to turn it round; hence, one side of the wheel must be

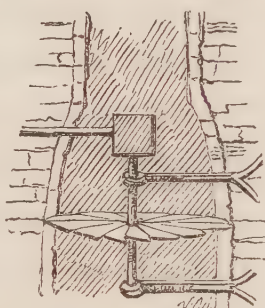
sheltered, while the other is submitted to the full action of the wind. For this purpose it is enclosed within a large cylindrical framework, which is furnished with doors or shutters, on all sides, to open at pleasure and admit the wind, or to shut and stop it. If all the shutters on one side are open, whilst all those on the opposite side are closed, the wind, acting with undiminished force on the vanes at one side, whilst the opposite vanes are under shelter, turns the mill round; but whenever the wind changes, the disposition of the blinds must be altered, to admit the wind to strike upon the vanes of the wheel in the direction of a tangent to the circle in which they move."

"Well; have you any other machine to explain to your scholars?" asked the vicar; "for," continued he, "I am anxious to present them with a bow and arrow which I have provided for their amusement."

"I will, if you please, first describe to them the mechanism of the smoke-jack; and I am desirous of doing so, as I have a very pleasing experiment to exhibit, which is founded upon the same principle."

Mr. Seymour then described the more com-

mon form of this machine. It consisted, he said, of a number of vanes, of thin sheet-iron, arranged in a circle, as here represented, but all set obliquely at a proper angle of inclination. Its action was explained in the following manner: — When



a fire is kindled in the chimney, the air which, by its rarefaction, immediately tends to ascend, strikes on the surfaces of the inclined vanes, and by a resolution of forces, similar to that already explained, causes the spindle, to which they are affixed, to turn round, and consequently communicates the same motion to the spit. The brisker the fire becomes, the quicker will the machine move, because, in that case, the air ascends with greater rapidity.

“ I will now exhibit to you a mechanical amusement which is founded on the same principle,” said Mr. Seymour. “ Fetch me the piece of pasteboard which lies on the library table.”

The pasteboard was produced, and Mr. Seymour described upon it a spiral, similar to that which is represented in the annexed figure.

The spiral was cut out, and extended, by raising the centre above the first revolution. It was then suspended upon a small spit of iron, which had been previously prepared ; by applying the centre or summit of the spiral to its point. The whole was now placed on the top of a warm stove, (the application of a lamp would have answered the same purpose) and the machine, to the great delight and astonishment of the children, soon put itself in motion, and turned without the assistance of any apparent agent. The agent, however, in this case, was the air, which being rarefied by the contact of a warm body, ascended, and thus produced a current. The accompanying sketch may render this experiment more intelligible to the reader.



The vicar observed that, to him, the experiment was perfectly novel ; although he remembered having seen what he now supposed must have been a similar contrivance ; but which, until that moment, he had always considered as the effect of clockwork."



“ And what might that have been ? ” asked Mr. Seymour.

“ The revolution of a serpent, which I noticed in several windows in London, during a late illumination.”

“ Undoubtedly ; it was nothing more than a spiral, so painted as to resemble that reptile, and which owed its motion to the action of air heated by a lamp placed beneath it.”

“ Now, then,” exclaimed the vicar, “ let us direct our attention to the bow and arrow ; see the present I have provided for you, Tom ! ”

So saying, the worthy clergyman produced a bow and a number of arrows ; which, at his desire, had been sent from London.

“ I think,” observed Mr. Seymour, “ that you should accompany your gift with some account of archery, or the art and exercise of shooting with the bow and arrow.”

“ That will I readily do,” replied Mr. Twadleton ; who accordingly proceeded as follows :—

“ The bow is the most ancient and universal of all weapons, and has been found to obtain amongst the most barbarous and remote nations. In the days of David the practice of the bow

would appear to have been so general, that it was not unfrequently made use of as a figure of speech. Israel, when blessing his sons, says of Joseph, ‘ the *archers* have sorely grieved him, and shot at him, and hated him ; but his *bow* abode in strength, and the arms of his hands were made strong, by the hands of the mighty God of Jacob.’ ”

“ Its earliest application was probably for the purpose of obtaining food,” observed Mr. Seymour.

“ Your conjecture has the weight of testimony,” replied the vicar ; “ when Isaac sent Esau to the forest, he said, ‘ Take, I pray thee, thy weapons, thy quiver, and thy bow, and go out to the field, and take me some venison :’ and it is even a question, whether the *Saxon* bow was ever used by the Anglo-Saxons and Danes for any other purpose than that of procuring food, or pastime ; for the representation of this bow, in an ancient manuscript† of the tenth century, shows it to have been very differently constructed from what one might expect in a military weapon ; in size, too, it was a mere

\* Gen. xlix. 23, 24.

† MS. Cott. Claud. B. IV.

toy, compared with the bow of succeeding ages."

"There can be no doubt that the bow and arrow were employed for the purpose of killing animals for food from the earliest times ; but its principal interest is derived from its military applications ; will you, therefore, give us a sketch of its history, and confine yourself to its practice as a warlike instrument in England ?"

"And may I also beg of you, my dear sir," added Mrs. Seymour, "to explain the different terms which are employed to denote its parts and applications ; such information will be, just now, highly acceptable to me, as I am reading some romances, in which those terms are constantly occurring."

"You shall be obeyed, madam," replied the vicar, with a courteous smile.

"We are, probably, indebted to the Norman conquest for the introduction of the bow and arrow as a hostile weapon ; but, before I enter upon that subject, it is necessary to state, that the bows, in use in England, have been of two kinds, the common or *long* bow, and the *cross* bow. The former does not require any description from me, the latter, or *Arbalet*, as it was

called (from *Arbalesta*, i. e. *arcu-balista*, a bow with a sling), consists of a steel bow, fastened upon a stock, and is discharged by means of a catch, or *trigger*, which probably gave rise to the lock upon the modern musket."

"I beg pardon for the interruption," said Mr. Seymour, "but I cannot suffer the description of the cross-bow to pass, without noticing a simile which Bayle uses to explain the difference between testimony and argument; and I am the more anxious to do so, as we have frequently differed, respecting the relative value of these proofs. 'Testimony,' says he, 'is like the shot of a *long-bow*, which owes its efficacy to the force of the shooter; whereas argument is like that of the *cross-bow*, equally forcible, whether discharged by a dwarf or a giant.'"

"The merit of the simile exculpates you from an imputation to which such an interruption might otherwise have exposed you."

"I have now an observation to offer," said Mrs. Seymour, "which I hope you will meet with similar indulgence. *Arquebusade* derives its name from its having been formerly applied to wounds inflicted by the cross-bow or *Arbalet*."

“ I thank you, madam ; that etymology is entirely new to me, and will explain the medical name, *Aqua vulneraria*, which has been applied to that spirit.”

The vicar now proceeded without farther interruption.

“ The invention of cross-bows is said by ancient writers to have come from the Sicilians. They were first used in England by the Normans at the battle of Hastings ; and a *quarrel* or *bar-bolt* (which is synonymous with the arrow of the long-bow) was the immediate cause of Harold’s death. In the reign of Stephen, in 1139, the second council of Lateran prohibited their use ; and some historians assert, that they were not again used in this country till the reign of Richard I., whose death, occasioned by one at Chaluz, was considered as a judgment on his impiety. From the death of Richard till the splendid victories of Edward III., we hear little of the cross-bow as a military weapon. Its use appears to have been principally confined to the sieges of fortified places, and to sea-fights. In 1346, at the battle of Cressy, a large body of Genoese soldiers, who were particularly expert in its management, were in the service of the



French ; but at the commencement of the action, a sudden shower wetted the strings, and prevented the archers from doing their usual execution, while the English were still capable of annoying their enemies by the long-bow with complete success ; both this victory and that of Poitiers, ten years afterwards, were chiefly ascribed by the English to their archers. In 1403, at the battle of Shrewsbury, where Hotspur was slain, the archers on both sides did terrible execution ; and the victory of Agincourt, in 1417, was entirely owing to their skill. Under Edward IV., an ordinance was made, that every Englishman and Irishman, dwelling in England, should have a bow of his own height, to be made of yew, wych, hazel, ash, or any other seasonable tree, according to their power. By Henry VII., and his son Henry VIII., the use of the cross-bow was entirely forbidden ; and a penalty of ten pounds was to be inflicted on every man in whose house one might be found. From this time they seem to have been chiefly used for killing deer.\* Henry VIII. compelled every father to provide a long-bow and two arrows for his son at seven

\* See Shakspeare's Henry VI.

years old. Edward VI., Elizabeth, and James, all encouraged archery. John Lyon, who founded Harrow school in 1590, two years before his death, drew up rules for its direction, whereby the amusements of the scholars were confined to ‘driving a top, tossing a hand-ball, running, and shooting.’ The last mentioned diversion is in a manner insisted on by the founder, who requires all parents to furnish their children with ‘bow-strings, shafts, and tresters, to exercise shooting.’ A silver arrow used some years ago to be shot for by the young gentlemen of that school.”

The vicar concluded, and received the thanks of the party for the interesting information he had afforded them.

“There is one circumstance connected with the military history of the long-bow,” said Mrs. Seymour, “which has somewhat surprised me ; and that is, why it should so long have continued in estimation after the use of gunpowder.”

“That circumstance,” replied her husband, “will cease to astonish you, when you remember that, until the last century, muskets were very unwieldy instruments ; they were never used without a rest ; had no bayonets, and could

not be so frequently discharged as they are at present."

"Come," said the vicar, "I perceive that the children are impatient to try their skill, with their new instrument; let us walk out, and I will play the Scythian\* upon this occasion."

"Now, Tom," cried Mr. Twaddleton, "we must have an object. Let me see. Shall it be the 'but,' 'pricke,' or 'roaver?' † Come, try whether you can hit yonder gate-post. Take your bow, and here is an arrow."

Tom took the bow, and, placing the arrow on the string, was about to draw the latter, when the vicar exclaimed, "Stop — stop — you must pull back your hand to your right ear, in order to shoot the arrow; whereas you have placed the bow directly before you, and are about to return your hand to the right breast."

"I thought," said Tom, "that was the proper position; for I remember reading of the

\* The ancient nobility of Greece were instructed by the Scythians in the use of the bow, which in those days passed for a most princely education. *Potter, Arch. Græc.* tom.ii. l.iii. cap. 4. *Aquin. Lex Milit.* ii. 260.

† The 'but' was a level mark; the 'pricke,' a mark of compass, but certain in its distance; the 'roaver' was a mark of uncertain length.

Amazonian women, who are said to have parted with their right breasts, lest they should prove an impediment to their using the bow."

"I do not mean to assert," replied the vicar, "that there is not ample classical authority for your proceeding. The Amazons undoubtedly shot their arrows in such a position; and so, in truth, did the primitive Grecians; although the ancient Persians drew the arrow to the ear, according to the fashion of later ages, and which I greatly prefer for its superior convenience."

The party now amused themselves for some time; each shooting in his turn at the mark which was chosen for the trial; and with a success which, considering it was their first attempt, the vicar declared to be "quite marvellous."

At the conclusion of the sport, Mr. Twadleton informed his friends, that parochial duties required his attendance at the vestry, but Mr. Seymour told him that, before he quitted them, he had a circumstance, which had lately reached his ears, to communicate to him.

"No bad news from the major, I trust."

"No, indeed; it concerns yourself, and I fear will be received with surprise and regret. You

are about to lose your old faithful servant Annette."

"Annette! Why, my dear Mr. Seymour, I have never heard a word of her illness. Surely, Dr. Doseall cannot be in attendance upon her!"

"No, no. I suspect that you will accompany her to the altar, before you follow her to the grave."

"Marriage! stuff and nonsense! Annette is too old and sensible. Depend upon it, that she will not desert her master."

"I assure you that she is engaged to Jacob, the major's valet."

"Ha! ha! it is really too ridiculous to suppose that her cold and unsusceptible heart can have been warmed by such an asthmatic suitor. I should as soon expect to see the ashes of a cinder fire blown into a flame by a pair of broken-winded bellows."

"Extraordinary as it may seem, it is nevertheless true."

"My dear sir, you are jesting. What, Annette desert her master, and for such a varlet! And yet I remember having frequently seen the fellow at the vicarage of late. It may be true—it is possible—it is probable—nay, I



begin to think it very likely. Oh ! the hussy, the ungrateful hussy ! —but I will instantly summon her before me.”

“ You had better first enquire of Miss Kitty, for I strongly suspect that she may be able to afford you some information upon the subject.”

The vicar immediately set off at a quick pace ; his anger accelerating his velocity, and his velocity, in return, increasing his rage, just as the fire in a chafing-dish is blown up by running with it. Such, at least, must have been the image presented to the imagination of Mr. Seymour upon this memorable occasion ; for, as the vicar rapidly receded from him, he was heard to exclaim, as if in mockery of his learned friend’s habit of quotation, “ ‘ *Cursu ventilat ignem,*’ as Juvenal has it.”

## CHAP. VI.

THE ARRIVAL OF ISABELLA VILLERS. — THE RE-  
 APPEARANCE OF MR. RICHDALE.—AN ENIGMA.—  
 THE RIDDLES OF SAMSON AND CLEOBULUS. —  
 ANOTHER PEEP INTO THE ARCHIVES OF THE  
 VICARAGE. — SOUND, HOW PROPAGATED BY  
 AERIAL VIBRATION. — MUSIC. — A LEARNED  
 DISCUSSION TOUCHING THE SUPERIOR POWERS  
 OF ANCIENT MUSIC. — THE MAGIC OF MUSIC,  
 A GAME WHICH, AS THE AUTHOR BELIEVES,  
 HAS NEVER BEFORE BEEN DESCRIBED.—AN IN-  
 TERESTING ADVENTURE IN THE VALLEY OF  
 GEOLOGY. — THE GAMBOLS OF A RURAL SPRITE,  
 TO WHOM THE READER WILL BE HEREAFTER  
 INTRODUCED.

IT was just four o'clock, when the sound of the porter's bell, and the rolling of carriage-wheels, announced the approach of some important stranger to the lodge. It was Miss Villers;—yes, gentle reader, it was the heroine of our story! who, in defiance of every established principle of novel-writing, has, for reasons which the sequel may, perhaps, justify, been studiously concealed from your view, until the second volume has nearly numbered half its pages. You are, doubtless, burning with impatience to become acquainted with a person

of whom much has been said, and still more implied. Were this a romance rather than an instructive history, we should, at once, charge our pencil with the glowing hues of the rainbow, and proceed to colour the outline which your imagination must have already sketched: but the character of the present composition fortunately renders such a task unnecessary; we say "fortunately," for the magazines of romance have actually become insolvent from the numerous and heavy drafts of the novel-writer; the regions of fancy have been so despoiled of their blossoms, that scarcely a flower can be culled by him who would entwine a garland for the brow of his heroine; and such even as may have escaped the grasp of this voracious horde, will be found to have faded under the withering influence of those insects of literature, which, fluttering or creeping about their petals, have rendered their fragrance pestilential, and turned their honey into bitterness. Where can be found the emblem of that damask lip which, arched like the bow of Cupid, shot an unerring dart, whenever a smile relaxed its tension? We might describe the perfect symmetry of her form, but what language could

convey to the mind's eye the witcheries with which the graces had surrounded it? we might depict the features of her countenance, but how could we catch and fix the varying expressions which lighted it up with the magic glow of intelligence? we must, therefore, exercise the judgment of Timanthes, and leave the reader to the exercise of his own imagination.

Mr. and Mrs. Seymour, accompanied by Mr. Twaddleton, received the fair visitor at the portico, as she lightly bounded from the carriage; and, after the salutations of the former had been concluded, the vicar stepped forward, and kissing the hand of Miss Villers, assured her that he anticipated much gratification from the visit of so accomplished a lady to his village; for he remembered that Mr. Twaddleton, as vicar of the parish, considered Overton, as the pope may be supposed to regard Rome, the undisputed capital of his theocratical government.

The younger branches of the family were absent on a nutting excursion to Thornberry wood, which was about two miles distant, and did not return until some time after the arrival of Isabella Villers. No sooner, however, had Louisa and Tom been introduced to her, than they

simultaneously declared, that she was the most charming young lady they had ever beheld.

“ And where have you been strolling ? ” said Mr. Seymour to the children.

“ Into Thornberry wood, papa, where we have collected two large bags full of nuts ; and whom do you think we met on our return ? ”

“ How can I possibly answer that question ? ” replied Mr. Seymour.

“ Mr. Richdale, papa ; who says he has returned for a few days only, and that he intends to set off for the Continent in the beginning of next week.”

“ Indeed ! ” exclaimed Mr. Seymour ; “ and did he send any message to me ? ”

“ No ; but he asked whether you had not been lately teaching us the operation of the various toys, which act by the force of the air ; and when we told him that you had taught us the reason of the kite’s ascent, and the nature of the squirt, sucker, and pump, he gave us this paper, and desired us to open it in your presence ; and to send such an answer as it might require, to Upland Cottage.”

“ I perceive from the superscription that it is an enigma,” said Mr. Seymour.



“A riddle!” exclaimed Louisa; “how delightful! Pray read it, papa, and let us try to discover its meaning.”

Her father then opened the letter, and read as follows: —

“Mortal, wouldst thou know my name,  
 Scan the pow’rs I proudly claim.  
 O’er this globe’s capacious round  
 With fairy sprightliness I bound;  
 To ev’ry clime, to ev’ry soil,  
 With equal hand I give my toil.  
 O’er sea and land my power extends,  
 To ev’ry herb my care descends.  
 Did I withhold my vital breath,  
 Nature’s forms would sink in death.  
 When confin’d, or swiftly driven  
 By angry spirits in the heaven,  
 My wrath in thunders I make known,  
 And Discord claims me as her own.  
 ’Tis love of freedom makes me wild,  
 When uncontroll’d my nature’s mild;  
 And oft the nymph, in dewy grot,  
 Seeks solace from my plaintive note;  
 O’er lovers’ graves I waft a sigh,  
 And breathe the sound of sympathy.  
 And know, ye sons of Albion’s isle,  
 That when the Hero of the Nile,  
 Midst crowds with mournful pomp array’d,  
 In the cold lap of Earth was laid,  
 I sympathis’d with Britain’s tear,  
 And waved the banner o’er his bier.  
 ’Tis I who, from the trembling lyre,  
 Breathe tones of love and soft desire;

'Tis I, the spirit of the shell,  
 Who fill with notes the listening dell ;  
 And, when the war trump sounds alarms,  
 'Tis I who summon men to arms.  
 To man a slave, though free as air,  
 I grind his corn, his food prepare ;  
 Should he to foreign climes proceed,  
 He yokes me like the neighing steed,  
 And, by my quick but easy motion,  
 He traverses the stormy ocean.  
 His children, too, my presence court,  
 To give them toys, and make them sport :  
 Without my aid, their kites would lie  
 As useless weights that ne'er could fly ;  
 Their humming tops would soundless spin,  
 Unless I breath'd a spell within.  
 The modest maid, without my power,  
 Would wither like her kindred flower,  
 Unless my cup of sweets she sips,  
 Where are the rubies of her lips ?  
 Unless my glowing rouge she seeks,  
 Where are the roses of her cheeks ?  
 What art, again, can strew her tresses,  
 With half the grace my skill possesses ?  
 Ev'n goddesses are represented  
 In draperies which I invented.  
 Sometimes, 'tis true, I am so frail  
 As ruffian-like to raise your veil,  
 And thus to curious man reveal  
 The charms you modestly conceal.  
 Revenge the deed. Announce my Name,  
 For now you know the powers I claim."

"It is extremely pretty," exclaimed Louisa.

"It is beautiful," said Tom ; "but I should

like to find out the riddle it contains. What can that be which grinds our corn, and carries our ships across the sea? Canvass? Yes; canvass clothes the sails of the windmill, and forms those of the ship."

"And therefore visits every clime; while, as long as the sails remain fixed, they are quite tractable and steady," added Louisa.

"It will not do, Louisa; it cannot be canvass: for the sail is never boisterous when it is controlled; but when let loose, it shivers in the wind and is very unruly; whereas it is said in the riddle, 'When uncontroll'd my nature's mild,' which is quite the reverse. Let me see. Can it be string? My top could not hum without string."

"How can string prevent the modest maid from fading like a flower?" asked Louisa.

At this moment the vicar whispered in the ear of his little favourite, who shortly afterwards exclaimed, "I have it, Tom, — it is AIR."

The juvenile group now attentively perused the enigma, in order to discover whether its different parts would admit of such an interpretation. As soon as they arrived at the passage in which was described the waving of the

banners over the bier of Nelson, Tom declared that his sister must be wrong; and was proceeding to offer his reasons, when Mr. Seymour interrupted him, by observing, it was that passage which first suggested to his mind the solution of the enigma; and satisfied him that Louisa was perfectly right.

“It so happened,” continued he, “that I was present during the awful ceremony of Nelson’s interment in St. Paul’s; and never shall I forget the thrilling effect which was produced on the assembled multitude, by the solemn movement of the banners in the dome, as the bier slowly advanced along the aisle of the cathedral; and which was accidentally occasioned by a current of air from the western entrance, although, to the eye of fancy, it seemed as if some attendant spirit had directed the colours, under which the hero had bled and conquered, to offer this supernatural testimony of respect and sorrow.”

Miss Villers observed, that Louisa had unquestionably solved Mr. Richdale’s riddle, and she thought that an answer should, accordingly, be transmitted to Upland Cottage.

“I feel,” said she, “a strange and almost unaccountable interest for the author of that

poetical effusion; there is a sentiment pervading the whole of the composition which bears internal evidence of the intellectual refinement of the writer."

"Take care, my dear Miss Villers," exclaimed Mr. Seymour. "Remember that Mr. Richdale is young and accomplished; and that the boundaries between admiration and a stronger feeling of partiality, are ill defined and treacherous."

"Ah! my dear sir, I perfectly understand your hint, and I thank you for the feeling which suggested it; but depend upon it, Mr. Seymour, that nothing is to be feared on that subject."

As the lady uttered this sentence, her voice faltered, and the tear glistened in her eye. Mr. Seymour observed the effect his remark had produced, and although he was wholly unconscious of the associations it had raised, he saw plainly that he had touched a chord which vibrated in unison with her tenderest sympathies; and he felt regret at having raised 'a pang, where he intended to have created a smile.

Mrs. Seymour, with the kind intention, no doubt, of dissipating the gloom which the un-



fortunate speech of her husband had occasioned, proceeded to draw the vicar into conversation ; for she ever considered that worthy person as a fountain of gladness, whose streams freshened every thing around it into smiles.

“ And pray, my dear Mr. Twaddleton, what say you to these puzzles ? Do you hold them in as much horror as you would so many puns ? ”

“ By no means, my good madam. An enigma is a perfectly orthodox species of composition ; and is, indeed, sanctioned by the highest authorities of antiquity.”

“ I believe,” observed Mr. Seymour, “ that the pastime of riddle-making was extremely popular amongst the Grecians. Plutarch, if I remember correctly, has told us that the girls of his time worked at netting or sewing, and that the most ingenious amongst them ‘ made riddles.’ ”

“ The most ancient riddle on record,” replied the vicar, “ is to be found in the fourteenth chapter of the book of Judges.”

*“ And Samson said unto them, ‘ I will now put forth a riddle unto you ; if ye can certainly declare it me within the seven days of the feast, and find it out, then I will give you thirty sheets and*

*thirty changes of garments.' And they said unto him, 'Put forth thy riddle that we may hear it.' And he said unto them, 'Out of the eater came forth meat, and out of the strong came forth sweetness.'"*

"And did they find it out?" asked Tom.

"My dear boy," replied the vicar, "you must read the chapter to which I have alluded, and you will thence learn all about this enigma."

"We have also numerous riddles in profane writers of ancient date," observed Mr. Seymour.

"Did you ever read of that invented by Cleobulus, one of the seven wise men of Greece, who lived 570 years before Christ?" enquired the vicar.

"Pray be so kind as to relate it," said Tom.

Mr. Twaddleton, in compliance with this request, proceeded as follows:—

"There is a father with twice six sons; these sons have each thirty daughters, who are parti-coloured, having one cheek white, the other black. They never see each others' faces, nor live above twenty-four hours."

"A very strange and unsociable family!" observed Louisa.

“ I should never guess it,” said Tom, “ if I were to dedicate a year to it.”

“ You have, nevertheless, my boy, just pronounced the name of the said father, and that, too, after a single moment’s consideration,” replied the vicar.

“ The name of the father ! — how ? — where ? ”

“ It is a YEAR.”

“ A year ! ” exclaimed the astonished boy.

“ A year ! ” echoed Louisa ; “ to be sure it is ; I now see it all clearly. His ‘ twice six sons ’ are the twelve months ; the ‘ thirty daughters ’ the days of each month ; and, since one day must necessarily pass away before the next can arrive, they may be truly said never to see each others’ faces.”

“ Admirably expounded ! ” cried the vicar.

“ And each day,” added Tom, “ is certainly ‘ parti-coloured,’ as it is made up of light and darkness.”

“ Good, again ! The quick apprehension of these my little playmates,” said Mr. Twaddleton, as he turned towards Miss Villers, “ is highly interesting ; their minds, from well-regulated discipline, have acquired the faculty, if I may be allowed the use of the metaphor, of *winnowing*

a subject, so as completely to separate the grain from the chaff."

"To the merits of Mr. Seymour's system of instruction, I am no stranger," replied the lady, "nor am I unacquainted with the advantages which your antiquarian knowledge has afforded them; you have garnished the intellectual banquet with some of the choicest flowers of literature."

"You do me too much honour, madam," said the vicar, as a gracious smile flitted over his countenance; "but I rejoice to find that you attach a becoming importance to the researches of the antiquary. May I be allowed to hope that you will shortly favour me with a visit at the vicarage, and inspect my poor collection of antiques?"

"I anticipate a great treat, I do assure you," said Miss Villers; "but you speak too humbly of a collection which, as I have been led to believe, contains some of the rarest relics of ancient days."

"Some few, madam, some few, certainly. I have an undoubted specimen of the leathern money coined by John of France; some very tolerable samples of tapestry of the 'high and

low warp ;' a series of *sigilla*, or seals ; as well as a very interesting collection of impressions in wax, taken from grants of William the Conqueror, and you will notice that the colour of these waxen impressions is invariably green, to signify that the acts continued for ever fresh, and of force. Then, madam, I can show you a very curious collection of ancient rings, many of which, as you will perceive, were used as seals."

"Excuse my interrupting you," said Miss Villers ; "but allow me to ask, for information, whether the original use of rings was not for the sealing of acts and instruments ?"

"It has been so asserted ; and I am ready to admit that the ring was frequently used for such a purpose in the earliest ages. Thus Jezebel seals the warrant she sent for the killing of Naboth, with the king's *ring*\* ; this was, however, merely an incidental application. We find that Judah, Jacob's son, employed it in a different way ; for he gave Tamar his ring, as a pledge of his promise.† It also appears to have been in use at the same time amongst the Egyptians, and

\* First book of Kings, chap. xxi.

† Genesis, xxxviii.



for another purpose; thus Pharaoh puts his ring upon Joseph's hand, as a mark of the power he gave him.\* I could extend this subject to a considerable length," continued the vicar, "but I shall reserve my observations for some future occasion. Let me now consider. What other curiosities can I display for your delight and approbation? — Rock-basins — yes, the rock-basins from Carn-breh. Ay, madam, you will be quite astonished at a specimen which" —

"For goodness' sake! my dear vicar," interrupted Mr. Seymour, whose patience had been already wrecked; "for mercy's sake, Mr. Twaddleton, let us not again dive into those horrid basins of druidism; remember what martyrdom I have suffered on account of these said 'pools of lustration.'"

"Well, well," replied the vicar pettishly, "I consent to reserve the subject for the opinion of Miss Villers, who, I have no doubt, will readily pay her homage to their authenticity."

"Mr. Seymour, anxious to extricate himself and the party from the cobwebs of antiquity,

\* Genesis, xli.

seized this opportunity of turning the current of conversation into a different channel.

“ It is my intention to proceed to-morrow morning with the consideration of those toys which have the property of producing sound,” said Mr. Seymour.

“ I suppose you mean the whistle, whiz-gig, and humming top,” observed Tom.

“ Your papa, no doubt, alludes to those instruments,” said the vicar, “ and I greatly approve of the arrangement ; since our last lecture embraced the operations of the atmosphere, a subject with which the nature of sound is certainly intimately connected.”

“ We have lately considered the phenomenon of wind, as produced by the motions of the atmosphere, and I now propose to investigate another species of agitation of which the air is susceptible, a kind of vibratory or tremulous motion, which, striking on the drum of the ear, produces SOUND.”

“ Is it the air which produces sound ?” said Louisa, with much surprise, “ I thought it was always occasioned by the vibrations of solid bodies. Well do I remember, when Tom struck the finger-glass, that you immediately silenced

the sound by placing your hand upon it, and which you told us stopped the vibration of the glass, and so destroyed the sound."

"You speak the truth, but not the whole truth," replied her father. "Sound is undoubtedly the result of certain motions, or vibrations, produced in sonorous bodies, but these vibrations are communicated to the air, and from thence to the ear, in a manner which I shall presently explain."

"Do you mean to say, papa, that, if air were entirely excluded, bodies would be incapable of producing sound when struck?"

"Not exactly. Air is the usual conductor of sound, and unless some other medium be substituted, the removal of it would prevent a sonorous body from communicating any sensation to the ear. Liquids, however, are capable of conveying the vibratory motion to the organ of hearing; for sound can be heard under water. Solid bodies will also convey it, and in a much more perfect and rapid manner; (11) thus the slightest scratch with a pin, upon one end of a long piece of timber, will be distinctly heard on applying the ear to its opposite extremity. The tramping of a horse is to be perceived at a greater

distance by listening with the ear in contact with the ground, than by attending to the sound conveyed through the air. Upon the same principle, if we place our ear against a long brick wall, and desire a person at a considerable distance to strike it *once* with a hammer, it will be heard *twice*, the first sound travelling along the wall, the second through the air."

"I thank you for that hint," said the vicar. "I now understand the principle of a new instrument which Dr. Doseall employs for examining the pulsations of the heart. He places the end of a wooden tube upon the breast, and, applying the other extremity to his ear, declares that the sounds, thus conveyed to it, enable him to form the most accurate opinion in cases of diseased chest."

"In the same manner," observed Mrs. Seymour, "that you may hear the boiling of the tea-kettle, by placing the end of the poker on the vessel, and applying your ear to the handle."

"And does Dr. Doseall avail himself of this expedient?" said Mr. Seymour. "Well, I must allow," continued he, "that it is quite in character with the doctor, to apportion the

quantum of his physic to the state of his employer's *chest*."

"Come, come," exclaimed the vicar, "let us proceed with the subject of sound. These detestable puns are quite fatal to the progress of improvement."

"I do not exactly understand what you mean by a *sonorous* body. Will not every body produce a sound when struck?" asked Fanny.

"Those bodies are called *sonorous*, which produce clear, distinct, regular, and durable sounds, such as a bell, a drum, musical strings, wind instruments, and so on."

"And upon what does this peculiar property depend?" enquired Tom.

"Before I answer that question, I must explain the supposed nature of those vibrations of the air, upon which sound depends; you will then readily perceive why one species of matter should be better calculated than another for exciting them. It is generally believed that sound is conveyed through air by a succession of pulsations similar to those which are occasioned on the surface of smooth water by throwing a pebble into it. This at first produces a small circular wave round the spot in which



the stone falls ; the wave spreads, and gradually communicates its motion to the adjacent waters, producing similar waves to a considerable extent. The same kind of waves are produced in the air by the motion of a sonorous body, which will of course be in the centre, and the waves or pulsations will diminish in strength as they recede from that centre, until at last they become too weak to produce any effect on the ear."

"When I strike a bell, then, do I produce exactly the same motion in the air, that I do in the water by throwing a stone into it?" asked Louisa.

"With this difference," replied her father, that, as air is an elastic fluid, the motion does not consist of regularly extending waves, but of vibrations, and are composed of a motion forwards and backwards ; the undulations of the air differ also from those of the water, in not being confined to a plane, but in diverging in all directions from the centre ; or, in other words, the aerial undulations are spherical."

"It is a very puzzling subject," cried Tom.

"I cannot understand," said Louisa, "how the motion of the air can extend so as to convey

sound to a distance, if, as papa says, the air moves backwards as well as forwards."

"I see your difficulty, and will endeavour to remove it; attend to me. The first set of undulations which are produced immediately around the sonorous body, by pressing against the contiguous air, condenses it. The condensed air, though impelled forward by the pressure, re-acts on the first set of undulations, driving them back again. The second set which have been put in action, in their turn, communicate their motion, and are themselves driven back by re-action. Thus there is a succession of waves in the air, corresponding with the succession of waves in the water."

"Now I understand why sound requires some time to travel from a distant object to the ear, as you explained to us upon a former occasion\*," said Louisa.

"But you have not yet told us what renders a body sonorous," observed Tom.

"Its elasticity: a ball of damp clay, which does not possess this property, will produce no other sound, when struck, but that which arises

\* See Vol. I. p. 71.

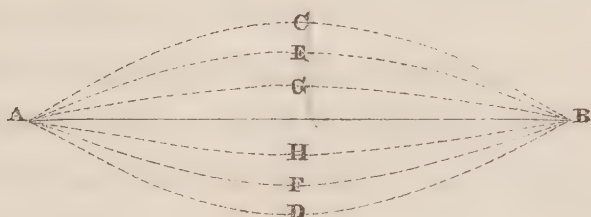
from the condensation of the small portion of air between the clay and the hammer which strikes it. A hollow ball of brass will produce more sound, because it is elastic; but still very little effect will arise from this, since a ball is the worst shape for admitting of vibration, on account of its forming an arch or dome, in every direction, so that one part stiffens and sustains the other: but if such a ball be divided, and the edge of one half of it struck, a loud, clear, and distinct tone will be produced; because an hemisphere will admit of the exertion of elasticity, or of momentary change of figure, which is conducive to the perfection of sound; and accordingly the bells used for clocks, and for musical purposes, have generally such a figure."

"I see clearly," said Louisa, "that it is the vibration of a sonorous body that communicates the necessary motions to the air; and I suppose that a body vibrates in proportion to its elasticity."

"Certainly it does; but to render this subject still more intelligible, I have prepared a diagram."

Mr. Seymour then exhibited a figure, of

which the annexed is a copy, and proceeded to explain it in the following manner:—



“ You are well aware that an elastic body, after having been struck, not only returns to its former situation, but having acquired momentum by its velocity, like the pendulum or swing\*, springs out on the opposite side. If, then, I draw the string A B, which is made fast at both ends, to c, it will not only return to its original position, but proceed onwards to d. This is its first vibration, at the end of which it will retain sufficient velocity to bring it to e, and back again to f, which constitutes its second vibration; the third vibration will carry it only to g and h, and so on, till the resistance of the air destroys its motion.”

“ That is exactly like the swing or pendulum,” said Tom.

\* See Vol. I. page 305. et seq.

“ As you are struck with the resemblance, take care and preserve the remembrance of it; for I shall, hereafter, have occasion to revert to it.”

“ As I now understand how sound is produced and carried to a distance, I should much like to learn the cause of different tones,” said Louisa.

“ Fond as you are of music, my dear Louisa, I am not surprised at the wish you have just expressed to become acquainted with the nature of musical sounds; I shall, therefore, endeavour to convey, in as simple a manner as possible, the theory which has been proposed for their explanation. I think you will immediately perceive that, if the aerial waves which I have endeavoured to describe, should be irregular, or run into each other, there must arise a confusion of sounds; thus *discords* may be readily imagined to be produced whenever a second vibration shall commence before the first is finished, so as to meet it half way on its return, and interrupt it in its course. In like manner may we conceive the general nature of those arrangements upon which *unison* and *concord* depend: where the vibrations are performed in



equal times, the same tone is produced by both, and they are said to be *in unison*; but *concord*, as you well know, is not confined to unison, for two different tones harmonize in a variety of cases. If, for example, the particles of one sonorous body vibrate in double the time of another, the second vibration of the latter will strike the ear at the same instant as the first vibration of the former, and this is the ‘concord of an *octave*.’ When the vibrations are as 2 to 3, the coincidence will be at every third vibration of the quickest, which therefore is the next degree of perfection, and is called a ‘*diapente*,’ or ‘fifth;’ while the vibration of 3 to 4 will produce the ‘*diatesseron*,’ or ‘fourth;’ but this, and the next which follow in order, are not so agreeable to the judicious ear, and are therefore called ‘*imperfect concords*.’ ”

Louisa here enquired whether the difference in the acuteness of a sound did not depend upon the nature of the vibrations; and her father, in reply, stated that it depended entirely upon the degree of quickness with which the vibrations were performed: the slower the vibration, the graver the tone; the quicker, the more acute.

“ But, if I strike any one note of the instrument repeatedly, whether quickly or slowly, it always gives the same tone,” observed Louisa.

“ To understand that fact,” replied her father, “ you must remember that the vibrations of bodies are regulated by laws very similar to those of the pendulum; consequently the duration of the vibrations of strings or chords depends upon their length, and thickness; for if two strings of equal magnitude, but with their lengths as 2 to 1, be equally stretched, their vibrations will be in the same ratio; therefore the shortest will make two vibrations, while the longest makes one: but the vibrations of the same string will always be the same whether it be struck quickly or slowly, upon the principle of the *isochronous* property of the pendulum, already described.”

“ Upon my word, Mr. Seymour,” cried Mr. Twaddleton, “ you are getting out of your depth; pray let us take leave of this subject, for I am quite sure that my young friends have already received more than they can carry away.”

“ I submit, my good sir; and in return for my compliance,” said Mr. Seymour, “ use your

influence over Miss Villers, and induce her to favour us with a practical illustration of our subject upon the piano-forte."

"Most cheerfully; but my intercession is quite unnecessary, for I am sure that our fair friend is no disciple of Tigellius." \*

"I am ever ready, sir, to comply with the wishes of those I respect. I consider the caprice which our sex too often displays upon these occasions, as not only a breach of good manners, but an evidence of unpardonable vanity."

"Pray, Miss Villers, may I be allowed to ask whether you have ever directed your enquiries into the nature of ancient music? it must have been very superior to that of modern ages," said Mr. Twaddleton.

"Upon a question of such doubt and difficulty, I feel that it would ill become a person of my very limited knowledge to offer an opinion; although I am willing to confess that the subject has often engaged my attention; and you could not afford me a greater gratification than by clearing up some of those doubts which have perplexed me. It is, I believe, admitted,

\* Horat. Sat. lib. i. sat. 3.

that we are unable to ascertain the real nature of ancient music: but it is evident that it was an art with which mankind was extremely delighted; for not only the poets, but the historians and philosophers, of the best ages of Greece and Rome are as diffuse in its praises, as of those arts concerning which sufficient remains have descended to evince the truth of their panegyrics.”

“ Nothing, as you very justly observe, is now left us, but conjecture,” said the vicar; “ and yet it is impossible to read the accounts of the extraordinary effects produced by the different ‘ modes ’ of ancient music, without entertaining a strong conviction of its great superiority over that of modern times. What have we, my dear Miss Villers, to compare with the soft ‘ *Lydian*, ’ the grave ‘ *Dorian*, ’ or the furious ‘ *Phrygian*, ’ to say nothing of the subaltern modes of Aristides Quintilianus and others; such, for example, as the ‘ *erotic*, ’ ‘ *comic*, ’ and ‘ *encomiastic* ? ’ What modern strains can produce the effects which are recorded to have followed the performance of Timotheus, the director of the music of Alexander the Great? One day, while the prince was at table, the musician performed an

air in the Phrygian mode, which made such an impression on him that, being already heated with wine, he flew to his arms, and was going to attack his guests, had not Timotheus immediately changed the style of his performance to the sub-Phrygian, or Lydian. This mode calmed the impetuous fury of the monarch, and induced him to resume his place at table. Music," continued the vicar, "has, in modern times, so fallen from this degree of majesty and power, as to induce some persons to doubt the truth of these historical statements."

"I confess, Mr. Twaddleton," said Miss Villers, "that I have always been inclined to regard ancient music as the mere vehicle of poetry; and to attribute to the power of the latter that influence which you appear to refer exclusively to the former."

"I am willing to admit," replied the vicar, "that in the ancient theatre, music always accompanied her sister science, assisting, animating, and supporting her; in short, that she was, in all respects, her friend and fellow labourer. '*Qualem decet esse sororem*,' as the poet has it: but does not this rather prove that poetry, in itself, was insufficient to produce its effects with-



out the aid of music? In farther proof of the power of ancient music, permit me to remind you that Plato has said, ‘No change can be made in music without affecting the constitution of the state;’ and Aristotle, who seems to have written his *Politics* only to oppose the sentiments of Plato, nevertheless agrees with him, concerning the power which music has over mortals; and has not the judicious Polybius told us that music was necessary to soften the manners of the Arcadians? In short, madam, music has lost its power over the passions of mankind, and this can only have happened in consequence of its having degenerated from its ancient purity and grandeur. If any one should have the hardihood to deny this my position, let him attend a modern rout in London. I have seen, my dear Miss Villers, a party at a whist-table, a dozen persons in *tête-à-têtes*, and as many solitary individuals, sitting like automatons, not one of them being moved by the concord of sweet sounds, with which some lady has been endeavouring to delight them. Had Timotheus appeared amongst them! hey, Miss Villers? I think I see the party at the whist-table, as his lyre successively changed from the Lydian to

the Phrygian mode. I must, however, in justice state, that I once did see a lady lay down her cards in an apparent state of ecstasy, as a chorus of Handel suddenly burst upon her ear."

"And what might that chorus have been?" said Mr. Seymour, "'*Blest be the hand?*' But, joking apart, you appear to have satisfied your mind upon a point which all the learning of Europe has left in a state of doubt and perplexity."

"I have merely delivered an opinion, sir; you perhaps will favour us with your judgment."

"The subject under discussion, my good sir, is one upon which no person can ever deliver a judgment."

"And pray, Mr. Seymour, why not?"

"For this plain reason, that it is not possible we can *hear* both sides."

"Psha! will you never cease to sully the pure stream of enquiry with the dregs of ridicule?"

"Well, then, to be serious; I agree with Miss Villers, that ancient music, whatever might have been its powers, was wholly indebted to the poetry which accompanied it, for its influence over the feelings of mankind. It could not

have been otherwise. The ancient instruments, as represented in sculpture, appear so simple as to be apparently incapable of producing great effects; and, indeed, amongst the writings of Aristoxenus, the oldest musical author, we cannot discover a trace of melody or harmony, such as we understand by *air* accompanied with different parts."

"To that very simplicity, am I disposed to refer the charm of ancient music," said the vicar; "it was addressed to the *ear*, sir, whereas modern music is addressed to the *eye*; dexterity of execution is, nowadays, more valued than beauty of composition; the sweetest shepherd that ever piped on his Doric reed, would be less applauded than he who can make his pipe squeak for the space of five minutes without respiration. The ancients knew better than to suffer the energy and accentuation of their rhythm to be so destroyed; and only mark, sir, the extreme jealousy with which they regarded every attempt to injure this simplicity; it even became a subject of legislation; and you no doubt remember the decree issued against Timotheus; which, as well as I recollect, ran thus, 'Whereas Timotheus the Milesian, coming to our city,

has dishonoured our ancient music, and despising the lyre of seven strings, has by the introduction of a greater variety of notes, corrupted the ears of our youth; and, by the number of his strings and the novelty of his melody, has given to our music an effeminate and artificial dress, instead of the plain and orderly one in which it has hitherto appeared; rendering melody infamous, by composing in the chromatic, instead of the enharmonic. The kings and the ephori have, therefore, resolved to pass censure upon Timotheus for these things; and farther, to oblige him to cut all the superfluous strings of his *eleven*, leaving only the *seven* tones, and to banish him from our city, that men may be warned for the future, not to introduce into Sparta any unbecoming customs.’”

“And now, my dear vicar, have you done? Have you said all you think necessary, in defence of ancient music? If so, hear me, as the advocate of modern harmony. In the first place, there is not an anecdote which can be adduced in support of your side of the question, that may not be met with one parallel, and equally strong, in defence of mine. You cite the authority of Plato, to show that the constitution

of a state may be affected by changing its national music. What said the great Lord Chatham?—‘*Give me the making of the national ballads, and I care not who makes the laws;*’ and the effects produced on the English people by Dibdin’s songs, fully justified the maxim: but remember, Mr. Twaddleton, it was not the music, but the *poetry* of those songs, which kindled the patriotic feelings which saved our country; and I apprehend that this has been the case in all ages, where the power of music has been said to excite the feelings of the populace. We know that the ancient bards of our own country called forth the emotions of their hearers by the poetry of their songs; and with what success they practised their calling we may imagine from the fact that Edward the First, in his conquest of Wales, had recourse to the barbarous expedient of murdering all the bards, from the many obstacles they threw in his way, by the strong hold which they had over the minds of the people. You have told us a story of Timotheus, and the influence of his harp over a drunken monarch. If this is adduced in proof of the power of ancient music, you must, at least, admit that modern times have also



had a Timotheus, who could excite or calm, at his pleasure, the most impetuous emotions. Henry III., king of France, says ‘*Le Journal de Sancy*,’ having given a concert on occasion of the marriage of the Duke de Joyeuse, Claudin le Jeune, a celebrated musician of that period, executed certain airs, which had such an effect on a young nobleman, that he drew his sword, and challenged every one near him to combat; but Claudin, equally prudent as Timotheus, instantly changed to an air, *sub-Phrygian*, or *Lydian*, I suppose, which appeased the furious youth. But, what shall we say of Stradella, the celebrated composer, whose music made the daggers drop from the hands of his assassins? Stradella was attacked by three desperadoes, who had been hired to assassinate him; but, fortunately, they had an ear sensible to harmony. While waiting for a favourable opportunity to execute their purpose, they entered the church of St. John de Lateran, during the performance of an oratorio, composed by the person whom they intended to destroy, and were so affected by the music, that they abandoned their design, and even waited on the musician to apprise him of his danger. Stra-

della, however, was not always so fortunate ; other assassins, who apparently had no ear for music, stabbed him some time afterwards at Genoa."

" And thus afforded a practical illustration of a passage of Shakspeare," exclaimed the vicar,

" ' The man that hath no music in himself,  
Nor is not mov'd with concord of sweet sounds,  
Is fit for treasons, stratagems, and spoils ;  
The motions of his spirit are dull as night,  
And his affections dark as Erebus :  
Let no such man be trusted.' "

" Are you satisfied ?" asked Mr. Seymour ;  
" if not, I will proceed to tell you how Palma, a Neapolitan, induced a creditor who came to arrest him, not only to remit his debt, but to contribute a sum for his support. I will also relate an anecdote of Farinelli the actor, who having a pathetic air to sing on the stage to a tyrant who had taken him prisoner, the person who performed the part of the tyrant, and was to have refused his request, was so affected by the music, that he actually melted into tears, and clasped the captive in his arms."

" Enough, enough !" exclaimed the vicar.  
" I see plainly that you believe not in the power of music."

“ In that you wrong me. I certainly do not believe that the ancients were better skilled than ourselves in music; and I have been anxious to convince you that there are as many modern as ancient stories, in proof of the influence of harmony over our feelings; but no one will deny that music is capable of producing extraordinary effects. Let us only interrogate ourselves, and examine what have been our sensations on hearing a majestic or warlike piece of music, or a tender and pathetic air sung or played with expression. Who does not feel that the latter tends as much to melt the soul and dispose it to pleasure, as the former to animate and exalt it? There is a celebrated air in Switzerland, which, I have no doubt, Miss Villers will presently play to us, called ‘ *Ranz des Vaches*,’ and which had such an extraordinary effect on the Swiss troops in the French service, that they always fell into a deep melancholy whenever they heard it. Louis XIV., therefore, forbade it ever to be played in France, under the pain of a severe penalty. We are also told of a Scotch air, ‘ *Lochaber no more*,’ which has a similar effect on the natives of Scotland. Never shall I forget the effect pro-

duced upon myself by the impressive requiem of Jomelli, as performed at the chapel of the Portuguese embassy to the memory of the late king of Portugal. The movement with which it commenced was a deep and hollow murmur, that seemed to swell from the tomb, and with which the voices of spirits imperceptibly rose, and intermingled; — a brilliant movement interposed, — it was a ray of hope, that pierced the gloom of the sepulchre !”

“I think,” said Miss Villers, “that I can exactly appreciate the nature and extent of Mr. Seymour’s opinion upon the question at issue. He does not deny the charm which the simple music of the ancients must have exercised over the hearer, although he attributes much of the effect to the poetry, of which it may certainly be said to have been the vehicle; and he evidently concurs with you, Mr. Twaddleton, in thinking that, owing to the intricate combinations of modern harmony, our astonishment at the execution of the artist too frequently overcomes the influence of the musical tones upon our passions. I perceive, however, from the expression of our friend’s countenance,” continued the young lady, “that, like a true antiquary, he clings to his

subject, though his support be no stronger than a cobweb ; under such circumstances I may be permitted to declare my sentiments upon the occasion, and I shall avail myself of this opportunity to express my humble testimony of gratitude, for the information and pleasure which I have just derived from your conversation. I believe then, gentlemen, that the language of modern music is no less forcible and expressive than that of ancient days ; and if you will only allow me to exemplify this truth by an experiment, I feel convinced that the vicar will become my proselyte.”

“ Indeed, madam ! Well, I will consent to trust the cause in your hands,” said Mr. Twadleton.

“ Allow me then to ask you, sir, whether you have ever heard of a game, which is justly entitled to the appellation of the MAGIC OF MUSIC ? ”

“ Never,” replied the vicar ; “ nor can I imagine either the nature, or objects of such a game.”

“ Its object is to display the power of music as an expressive language ; the manner in which I propose to exemplify it, I will, with your per-



mission, explain in a very few words. The musical performer shall place herself at the harp, or piano-forte, surrounded by the party who are desirous of witnessing the pastime; the person to be operated upon must retire from the apartment, until the service which, under the direction of the music, it is determined he shall perform, is duly agreed upon and arranged. Such person is then to be re-admitted; not a word, look, or gesture, is to escape from any one present; by the expression of the music alone is he to receive his instructions, and, unless I am much deceived, you will find that this is amply sufficient for the purpose."

"My dear madam, the thing is utterly impossible," exclaimed the vicar. "It cannot be done; unless, indeed, you really possess the secret of the ancient '*modes*,' which were not even known to Meibomius, the learned commentator upon the Greek musician Alypius; nay, Isaac Vossius himself, the expounder of rhythm, were he now alive, would never credit it."

"Are you willing to make the experiment?" said Miss Villers; "if so, be so kind as to leave the room for a few minutes."

The vicar accordingly prepared to depart,

casting at the same time, upon his fair companion, a look which sufficiently expressed the scepticism he felt upon the occasion.

“ But you have not told me,” said he, “ by what signal I am to return, and submit to the proposed ordeal.”

“ The music will inform you, if you pay sufficient attention to its language,” replied Miss Villers.

The door having been carefully closed, the company were consulted, in a whisper, as to the service they should require the vicar to perform. “ I should propose,” said Miss Villers, “ that Mr. Twaddleton be directed to take a rose out of the basket of flowers on the chimney-piece, and having smelt it, to carry it to the harp, and place it on its pillar; after this, I propose that he should strike the strings, and then lead Fanny out of the room.”

“ And do you propose to express all these different movements by the aid of music? If you succeed, there must be an end to the vicar’s scepticism,” observed Mr. Seymour.

“ If I fail upon this occasion, it will be the first time,” said Miss Villers: “ but you must all promise to be silent, and to maintain

the most absolute command over your countenances."

Miss Villers seated herself at the piano-forte, and played off an elegant and sparkling overture, which so delighted Mrs. Seymour that she involuntarily exclaimed, "If music can be made to speak an intelligible language, it must be under the guidance of Miss Villers."

"Hush," cried the performer, in a half whisper; "I am now about to summon the vicar into the room."

She accordingly, with exquisite taste and address, introduced the air of "*Open the door, Lord Gregory,*" into which she infused so much expression that the vicar must have been as dull as Midas, had he not instantly caught its meaning. Nor were the lady's hopes disappointed. Mr. Twaddleton entered, and appeared as if anxious to address the performer; but an intelligible glance from Mr. Seymour recalled him to his duty, and hermetically sealed his lips. His intention had been, doubtless, to enquire whether his appearance were seasonable; but the question was anticipated by Miss Villers, who immediately on his entrance struck up the air of "*See the conquering Hero comes,*" which, at once, sa-

tified his doubts, and conveyed, in language not to be misunderstood, the sanction of the enchantress, to whose spells he had so unservedly entrusted himself.

The vicar had been told that he was to perform certain acts on his re-admission into the room; but, thought he, how am I to discover the thread which is to guide me through so perplexing a maze? I can discover at this moment nothing but a concord of sweet sounds, that would rather dispose me to listen in profound repose, than to enter upon any service of exertion. Miss Villers saw and guessed the nature of his embarrassment, and changing the melody, struck into the air of "*Hearken, and I will tell thee how.*" She then, by a succession of well selected chords, which were now played "*piano*," and now "*forte*," convinced the vicar that she commanded an instrument fully capable of readily and forcibly expressing encouragement and repulse in all its degrees.

"Thus much then is certain," mentally ejaculated the vicar, "that she is enabled, by the aid of music, to signify her approbation, or disapprobation, at any act which I may attempt to perform. I accordingly predicate of this said

music, that it is, *bonâ fide*, a logical weapon ; in as much as it can affirm and deny. It, therefore, only remains for me, knowing as I do that I have some act to perform, to ascertain the ‘*locus*,’ or ‘*ubi* ;’ for the act in question, whatever it may be, must of necessity be done or accomplished in ‘*proprio loco*,’ or in some definite part of the room.” With this determination, founded, as he believed it to be, on the unerring basis of Aristotelian logic, he advanced towards the table ; but the loud and discordant sounds of the instrument, at once convinced him that, however correct his notions might be with reference to the ‘*substance*’ or first ‘*predicament*,’ they were evidently erroneous as to the ‘*accidents*’ of ‘*time*,’ ‘*place*,’ and ‘*relation* ;’ at least, such were the ideas that floated through the categorical organ of his cranium, and he accordingly faced about, and made a retreat towards the window ; but the notes now became still more clamorous, and increased in vehemence. Ay, ay, thought he, it is quite evident that I am receding from the theatre of action ; and with this conviction he diverted his steps into a different direction, and, in a slow pace, tracked the path by his ear, with as much saga-



city as a dog follows his prey by his nose. As he approached the fire-place, the storm of sounds gradually subsided, until a peaceful murmur breathed around, which finally died away as the vicar placed his hand upon the chimney-piece. So then it appears, after all, that I have some service to perform at the fire-side. It is, doubtless, to sit down, thought he, as he espied the elbow-chair, which, at that moment, appeared to his fancy, as if stretching forth its hospitable arms to receive him; but scarcely had he answered the imaginary invitation of his old friend, by presenting the nether part of his person to its luxurious lap of down, than a sudden *sforzato*, or crash in the minor key, made him rebound upon his legs, as nimbly as though the cushion had been a bed of thorns. Miss Villers now resolved the discord, and dexterously dashed into an allegro movement, in which she introduced the air of “*How sweet are the flowers that grow!*” The vicar’s face mantled with a smile, as the bouquet on the chimney-piece met his eye, and harmonised with the sounds that floated in his ear. It is evident, thought he, that those flowers are the object of my pursuit, — but what was he to do

with them? The musician solved the question, by tastefully exchanging the former air for that of “*Ask if yon damask rose be sweet.*” No sooner had these notes delivered their melodious errand to the subtle ear of the vicar, than he instantly seized the rose, and carried it in triumph to his olfactory organs; at the same moment the music ceased. The pause, however, was but of short duration; for Miss Villers, by resuming her labours, intimated that some farther service was expected. Was he to return the rose? Certainly not; for the attempt was marked by strong disapprobation. Was he to take it out of the room? The music put a decided negative upon that movement; for the vicar had scarcely measured half the distance of the apartment before the air of “*Fly not yet*” arrested his steps. By a continuation of the same varying style of expression, and strongly marked rhythm, the vicar was shortly led to affix the rose upon the harp; and he was farther directed to strike the chords of that instrument, by the happy introduction of the air of “*Gently touch the warbling lyre:*” and he concluded the whole of this curious exhibition, as it had been previously determined, by leading Fanny

out of the room, which he performed, without any hesitation, the moment the fair musician played Dibdin's popular air of "*Say, Fanny, wilt thou go with me?*"

In closing our account of this interesting scene, it is scarcely necessary to describe the delight of the vicar, the astonishment of Mr. and Mrs. Seymour, the satisfaction of Miss Villers, or the boisterous mirth of the juvenile party. It was, in truth, a very extraordinary exhibition; and when the reader considers that, beyond what was furnished by the expressive language of music, the vicar did not receive a single hint for his guidance, he may, perhaps, cherish some scepticism upon the subject; but we can assure him that we have repeatedly witnessed, not only a similar, but a still more complicated performance of the same kind, and with equal success.

The evening of the day on which this musical divertisement was performed, was one of those which so frequently occur in August, when sultry heat is succeeded by refreshing coolness. Isabella possessed a quick sensibility to the beauties of nature, and she quitted the drawing-room to enjoy the pensive quiet which, at that

hour, maintained an undisputed dominion. After sauntering along the winding path of the shrubbery, she reached the entrance of the valley. It was, as our readers will remember, a fairy region; can we therefore wonder that she, who visited it on such an evening, and at such an hour, should have felt the influence of its presiding genius, in releasing her imagination from the thralldom of the grosser senses? While gazing on the waterfall, as it sparkled at intervals in the silver beams of the moon, her Promethean fancy animated the rock from which it gushed, and gave to the impending sandstone a human form. She felt riveted to the spot; and her eyes, as if spell-bound, obeyed not her will. She gazed with intense feeling on the phantom, from which she had not the power of withdrawing her attention, while the flickering light, occasioned by the tremulous motion of the trees, played, like a halo, around it, and completed the illusion. At this moment a deep-drawn sigh issued from the geological temple, and her name was audibly pronounced. The fairy scene darkened around her; the objects swam before her eyes; the temple, fountain, and grove, were involved in an impenetrable mist; — she had

fainted. It is supposed that she must have remained in an insensible state for at least a quarter of an hour; since the party at the lodge, having become uneasy at her absence, had issued forth in different directions, and it was fortunate that Mr. Seymour had at once followed the path which led to her discovery. An alarm was instantly communicated, and a chair having been procured from the house, she was conveyed back in a state of great languor and oppression. The kind attention of her friends, however, speedily recovered her; and she then related the circumstances which had led to the adventure. She was readily satisfied by Mr. Seymour that the figure, to which her fancy had given an ideal form, was no other than a projecting mass of sandstone; but then she had distinctly heard her own name pronounced.

“By the solitary spirit of the dell,” said Mr. Seymour, with a smile; “a rural sprite who is disposed to become very loquacious whenever the repose of her habitation is disturbed. I assure you,” added he, “that you are not the first whom her gambols have surprised and terrified in the shades of evening. I presume you



have discovered that I allude to that unseen musician of the air — ECHO.”

“ Indeed, Mr. Seymour,” replied Miss Villers, “ the sound could not have been the effect of an echo, for I never spoke.”

“ But Mrs. Seymour called the name of Isabella at the gate of the orchard ; and I will convince you to-morrow that, according to the established laws of reflected sound, her voice must have returned to your ear in the very direction you heard it.”

“ But the sigh, my dear sir !”

“ Psha ! it was but a passing breath from the valley.”

Miss Villers felt that this explanation ought to satisfy her ; but there was a rebellious spirit in her brain which refused to be reconciled upon such terms, and over which her reason did not appear to exert any control. She determined, however to banish, if possible, the remembrance of the occurrence, and, for the future, to keep her excursive imagination within more rational bounds.

## CHAP. VII.

MUSICAL INSTRUMENTS MAY BE CLASSED UNDER THREE DIVISIONS. — MIXED INSTRUMENTS. — THEORY OF WIND INSTRUMENTS. — THE JEW'S HARP.—ITS CONSTRUCTION. — THE THEORY OF ITS ACTION.—THE FLUTE.—ETYMOLOGY OF ITS NAME.—THE WHIZ-GIG, ETC.—ECHOES; HOW TO BE EXPLAINED. — THE REFLECTING OBSTACLE MUST BE DISTANT FROM THE SOUND.—SIMPLE AND COMPOUND ECHOES. — THE WHISPERING GALLERY IN THE DOME OF SAINT PAUL'S.—THE SPEAKING TRUMPET. — THE INVISIBLE GIRL. — OTHER ACOUSTIC AMUSEMENTS. — THE REFORM OF TOM PLANK, AND THE DISTRESSES OF WILL SNAFFLE, SAM TICKLE, AND ROGER NAYLOR. — ANOTHER MOONLIGHT ADVENTURE, BY WHICH AN IMPORTANT DISCOVERY IS EFFECTED.

UPON the appearance of Miss Villers at the breakfast table on the following morning, her pallid countenance and sunken eye did not escape notice. Her repose had been disturbed by feverish dreams, to which the events of the preceding evening had, doubtless, given birth. Mr. Seymour had observed this change with sorrow, and invited her to accompany him to

the valley, in order to be satisfied that the sounds she had heard were to be easily accounted for on philosophical principles.

“ My dear sir,” replied Miss Villers, “ I feel that your explanation ought to have satisfied me; but I think you will allow that, contrary to our better judgment, an impression will occasionally take such strong possession of us, as to baffle every effort which reason may exert to efface it. In truth, there was something so plaintive in the voice that pronounced my name, that the sound at this very moment lingers on my ear, and produces an indescribable emotion.”

“ Well ; I propose to dedicate an hour, after breakfast, to the explanation of the several toys which owe their action to atmospheric vibrations ; after which, I shall be at your service to interrogate the spirit of the valley ; and the children, whom I intend to accompany us, will be thus better prepared to comprehend the theory of the echo, which has occasioned so much alarm.”

Mr. Twaddleton, at this moment, entered the room. He hoped that Miss Villers had not suffered from her late alarm. The lady acknow-

ledged the enquiry by a faint smile and inclination of the head, while a glance from Mrs. Seymour at once prevented any farther observation.

Breakfast having been concluded, Mr. Seymour announced his intention of commencing his lecture.

“Musical instruments, amongst which I include the toys to which I have alluded,” said he, “may be classed under three heads:—*stringed* instruments, such as the harp, violin, &c.; *wind* instruments, as the flute and trumpet; and instruments of *percussion*, as the tabor and drum.”

“And which kind do you consider the most ancient?” asked Miss Villers.

“*Wind* instruments, madam, most unquestionably,” cried Mr. Twaddleton. “Diodorus ascribed their invention to the accidental notice of the whistling of the wind in the reeds, on the banks of the Nile; and the poet Lucretius maintained a similar opinion.”

“I really, my dear sir, cannot see any good reason for giving this preference, in point of antiquity, to wind instruments,” said Mr. Seymour. “The lyre, or harp, is, surely, as ancient

as any instrument on record. The mythologist ascribes the idea of producing sound by the vibration of a string, to Apollo; which is said by Censorinus to have suggested itself to him, on his hearing the twang of the bow of his sister Diana. With respect to instruments of percussion, it may be reasonably supposed that the sonorous ringing of hollow bodies, when struck, must have very soon suggested their invention to mankind; but I really consider any research into a question of such obscurity as uninteresting as it must be hopeless; let us rather devote our attention to the philosophy of these instruments. I have stated that they may be referred to three principal classes; but I must, at the same time, observe that, in some cases, the vibrations of solid bodies are made to co-operate with those of a given portion of air; for example, trumpets and various horns may be said to be mixed wind instruments, since their sound is produced by the joint vibrations of the air and a solid body; and in certain stringed instruments, as in the violin, the immediate effect of the strings is increased by means of a sounding board, which appears to be agitated by their motion, and to act more



powerfully on the air than the strings could have done alone."

"I apprehend that this mixture must obtain more or less in all instruments," said the vicar.

"Not at all. The flute, flageolet, humming-top, and the cavity of the mouth in whistling may be considered as simple wind instruments, in which the quality of the sound is alone determined by the vibrations of the air. I have already explained the manner in which the oscillations of a string excite aerial undulations, and thus produce sound; and you have seen that the nature of these sounds is determined by the length and thickness of such strings; the theory equally applies to wind instruments, in which case, a column of air corresponds with the string, the volume and length of which determines the sound. In the harp, the strings are constructed of different lengths and dimensions; and so, in the *Syrinx*, or *Pan's pipes*, is the volume of air adjusted to the respective notes by the size and length of the reeds; but, in the violin, the lengths of the strings are altered at pleasure by pressing them down on the finger board; and, in like manner, the effective length of the flute is changed by the

opening or shutting the holes made at proper distances in them; the opening of a hole at any part being the same in effect as if the pipe were cut off a little beyond it."

Mr. Seymour and the vicar then entered into a long and inflated discussion, with which it is not our intention to swell our history, or to exhaust the patience of the reader; we shall, however, by permission, collect from the mass some of the more interesting facts, and present them in as condensed a form as may be consistent with perspicuity. In speaking of the *Jew's harp*, a little instrument with which every school-boy is well acquainted, the vicar stated that its origin was lost in the long lapse of time; but that it was in very common use throughout Europe, and more especially in the Netherlands and the Tyrol, where it was the delight of the peasants and their families. He also said that it was known in Asia, and that the Greeks of Smyrna called it, in imitation of its sound, *biambo*. Mr. Seymour described its construction, and the theory of its action. It is composed of two parts, the *body* and the *tongue*: the former has some resemblance to the handle of a certain kind of corkscrew; the

latter consists of a little strip of steel, joined to the upper part of the body, and bent at its extremity, so that the fingers may touch it more readily. This tongue, or elastic plate, produces, in itself, only a sound which serves as a drone, although it appears to act like the motion of the bow of a violin in exciting other sounds, by breaking the current of air from the mouth, the acuteness or gravity of which will be determined by the pressure of the lips, and the magnitude of the cavity of the mouth. The subject was agreeably concluded by some anecdotes which were related by Miss Villers, in proof of the astonishing powers of this little instrument when directed by the skill of a master. For the sake of those who may be curious upon this subject we have introduced an account of two great performers, in an additional note. (12) In speaking of the flute, Mr. Twaddleton took occasion to observe, that its name was derived from *fluta*, a lamprey, or small Sicilian eel, which has seven holes on each side; an etymology which will probably be as new to our readers as it was to ourselves. The children also received their share of instruction and amusement upon this occasion.

Tom, for the first time, became acquainted with the use of the pea in the whistle, which, he was told, was to agitate and break the current of air, and thus to produce a succession of quick vibrations upon which the acuteness of its sound depended. Louisa exhibited her *whiz-gig*, which, for the information of the unlearned reader, we may state to consist of a hollow disc of wood, having an opening in its side, like that in the humming-top; by the alternate coiling and uncoiling of the cord upon which it is strung it receives a circular motion, the rapidity of which produces, by means of its opening, an aerial vibration that gives a loud ringing sound.

The lecture having been concluded, Mrs. Seymour proposed that the party should, at once, proceed to the valley, but the vicar suggested the propriety of first explaining to the children the principle upon which the echo depended.

Mr. Seymour concurred in this opinion, and immediately afforded the following explanation: —“ An echo is nothing more than a reflected sound. When the aerial vibrations strike against any obstacle of sufficient magnitude, they are re-

flected back to the ear, and produce a repetition of the sound, which will appear to proceed from the point whence they are reflected, so that the apparent direction of the voice becomes completely changed by an echo. A considerable extent of level wall will sometimes produce it in great perfection; for a smooth surface reflects sounds much better than a rough one: but the circumstance which, perhaps, contributes more than any other to the perfection of an echo, is the form of the reflecting surface; a convex surface is a very bad reflector of sound, a flat one reflects very well, but a small degree of concavity is the form best adapted to the purpose."

"I believe," observed the vicar, "that fluid bodies will also, under certain circumstances, so reflect sound as to produce echoes."

"Undoubtedly. The surface of water, especially at the bottom of a well; and sometimes even clouds will produce this effect."

"Do you mean to say, papa," asked Tom, "that sound is reflected from an obstacle to the ear, in the same manner as my ball is reflected after striking the wall?"

"Certainly: supposing, of course, that your



ball is perfectly elastic; and, in that case, you no doubt remember the direction it will follow."

"It will always make the angle of *reflection* equal to the angle of *incidence*\*, " said Tom.

"Undoubtedly; and so it is with sound, since air, as you know, is perfectly elastic. If, therefore, the vibrations fall perpendicularly on the obstacle, they are reflected back in the same line; if obliquely, the sound returns obliquely in the opposite direction, the angle of reflection being equal to that of incidence. You will, therefore, readily perceive," continued Mr. Seymour, addressing his conversation more particularly to Miss Villers, "that a person situated at an appropriate angle may hear an echo, as it is returned from the reflecting surface, without hearing the original sound which produced it."

"I admit the theory, sir, to its fullest extent," replied Miss Villers, with a significant smile.

"As a smooth and concave surface is capable of producing an echo, how does it happen that

\* The reader is requested to turn to page 13. of the present volume, for all that is there said respecting the principle of *reflected* motion will apply to the theory of the echo.

we so rarely meet with one in a room?" asked Louisa.

"Echoes, my dear, are, in fact, produced in every room, by the reverberation of sound from its walls; but on account of the velocity with which it travels they are imperceptible in small chambers, because the sound occupies no sensible period of time in moving from the mouth to the walls, and in returning back to the ear again, consequently, the original sound and its echo become so blended and incorporated, as to appear but one sound. As the dimensions of the apartment increase, the defect will increase with it; and, in buildings for music or public speaking, it is often highly inconvenient, and difficult of prevention. Breaking the surface, or rendering it uneven by mouldings and ornaments, appears to be the most effectual method of curing the evil."

"I perceive then, papa, that in order to produce a perfect echo, the person who speaks must be at a considerable distance from the obstacle that reflects the sound," said Louisa.

"It cannot be otherwise," replied her father; "and if you will only consider the rate at which sound travels, you will readily understand the

necessity of such an arrangement. In order to produce a distinct echo of one syllable, or of a single sound, the reflecting obstacle must be at least 70 feet from the sound, so that it may have to pass through a distance of 70 feet to get to the reflector, and 70 more to return to the ear, making a total passage of 140 feet, which it will accomplish in rather less than one eighth of a second; a period of time so small, that, if it were diminished, it is evident the echo must be assimilated with the sound itself."

"But the echo in the valley," observed Mrs. Seymour, "will repeat four or five syllables."

"Undoubtedly. If we make the experiment at a sufficient distance from the sandstone rocks which act as the reflector."

"It would appear, then, that the farther the reflecting object is off, the greater number of syllables will the echo repeat; and I should think that this fact might enable us to compute the distance of the reflector," said Mrs. Seymour.

"In a moderate way of speaking, about three and a half syllables are pronounced in one second, or seven syllables in two seconds; when an echo, therefore, repeats seven syllables,

we may infer that the reflecting object is 1142 feet distant."

"But, my dear Mr. Seymour, this must surely depend upon the nature of the syllables," said the vicar. "Pray excuse the interruption; but you will admit that there must exist a great difference between the echo of dactyles and spondees. Suppose an echo should be able to return ten syllables; thus —

" 'Tityre, tu patulæ recubans —'

I will be bound for it, that if you were to try its powers in slow heavy spondees, as *monstrum horrendum*, a return of not more than four or five syllables could be observed."

"I will not dispute that point," said Mr. Seymour.

Louisa here remarked that she had often heard of some very extraordinary echoes in different parts of the world, to which her father had not alluded; she mentioned, for instance, those which are said to repeat the same sound several times in succession.

"From the explanation which I have already given of the nature of echoes," said Mr. Seymour, "it will be easily conceived that a vast

variety of effects may be produced by varying the form, the shape, the distance, and the number of reflecting surfaces; and hence we hear of various surprising echoes in different places. It is not difficult, for instance, to understand the nature of compound, or tautological echoes; in which case the expression of one *ha* will appear like a laughter. Addison mentions an extraordinary instance of this kind near Milan, which will return the sound of a pistol fifty-six times."

"I have understood that the echoes on the lakes of Killarney are of this multiplied description," said the vicar.

"They are particularly calculated to produce reflections of sound, from the height of the mountains, and the expanse of water," replied Mr. Seymour, "which latter circumstance always assists the conveyance of reflected, as well as direct sound. I believe that there is a certain spot on the shore of Ross island, where the sound of a bugle produces an echo which far exceeds any other to be met with amongst the lakes; the first echo is returned from the castle, the second from the ruined church of Aghadoe, the third from Mangerton, and afterwards innu-



merable reverberations are distinguished, which, like the faded brilliancy of an extremely multiplied reflection, are lost by distance and repetition."

"There is an admirable echo," said the vicar, "behind my old college at Cambridge; and often have I, while walking on the road to Chesterton, on a calm evening, distinctly heard twelve repetitions of the voice. Lord Bacon, if I remember correctly, mentions an instance of sixteen, in some ruined church near Paris."

"It was in the church of Pont-Charenton, on the Seine," replied Mr. Seymour; "in which place that great philosopher discovered the inability of an echo to return the letter S, for having pronounced the word *satan*, the echo replied *va-t-en*, which in French signifies *away*; from which circumstance, the Parisians concluded, that some guardian spirit prevented the walls of the sacred edifice from pronouncing the name of *satan*."

"And will not an echo repeat the letter S?" asked Louisa.

"Not always," answered her father; "the hissing or sibilant noise of the letter, when at

the commencement of a word, is generally lost, unless the echo be extremely perfect."

The party now set off on their excursion to the valley. Mr. Seymour disposed them in such situations as were best calculated to display the powers of the echo, and to illustrate the several effects which he had endeavoured to explain. The vicar performed his experiment with dactyles and spondees, and was highly gratified to find that their results proved, in a most satisfactory manner, the correctness of his conjecture. The attention of Miss Villers was particularly directed to the effect of the voice of Mrs. Seymour from the orchard gate, and which, she said, convinced her that the sound she had heard on the preceding evening must have arisen from the cause assigned to it. She determined to pay another solitary visit to the geological temple by moonlight, as a penance for the folly she had committed; but, for obvious reasons, she deemed it necessary to keep this resolution secret.

After the party had fairly tired themselves by their converse with the airy and unsubstantial being, who had as resolutely maintained the privilege of having the last word, as ever did the

faithful Jerry Styles, they descended to the sandstone rocks, which Mr. Seymour pointed out as the local habitation of the solitary spirit. These were duly examined by Louisa and Tom, and their operation as a reflecting screen was pointed out to them by their father. They now returned into the geological temple; its singularly beautiful pillars very naturally attracted the attention of Miss Villers, and she expressed a wish that Mr. Seymour should describe the plan of their construction; for it was very evident, as she said, from the disposition of the specimens, that the arrangements had been directed with some view to geological illustration. Mr. Seymour felt gratified by this request, and promised to comply with her wishes, as soon as he had finished the investigation of those laws by which the reflection of sound was governed.

“Why, bless me!” exclaimed the vicar, “the revels of our airy companion are ended; and I maintain, that nothing can be more appropriate than the consideration of the objects for which Miss Villers has expressed so much interest. In truth, the history of echo is classically associated with that of geology: by diving into the recesses of the rock, we do but pursue her de-

scent from air to earth ; for you, no doubt, remember that after she had been deprived of her loquacity by Juno, she became enamoured of Narcissus, pined away, and was transformed into stone.” \*

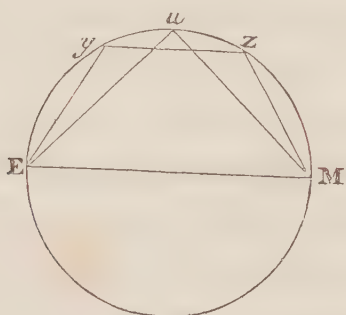
“ I cannot but admire the ingenuity with which you embellish every subject with classical decorations,” replied Mr. Seymour. “ You, however, must well know that I require no such allurements on the present occasion. I shall be most willing to afford Miss Villers the information she requires, as soon as I have explained to my young pupils the principle of the whispering gallery in St. Paul’s ; as well as some recreations which are indebted for their effects to the reflection of sound.”

“ I ought to apologise for the interruption I have occasioned,” said Miss Villers ; “ but I was not, until this moment, aware of the extent to which you intended to carry your illustrations.”

Mr. Seymour commenced with the subject of the “ whispering gallery,” at the foot of the dome of St. Paul’s cathedral ; and in order to render intelligible the manner in which sound is concentrated, and thereby magnified in that hollow

\* Ovid’s *Metamorph.* 3. 358.

hemisphere, he produced a diagram, of which the annexed cut is a copy.



He explained it as follows : —

“ M shows the situation of the mouth of the speaker ; and E, that of the ear of the hearer. Now, since sound radiates in all directions, a part of it will proceed directly from M to E, while other rays of it will proceed from M to *u*, and from M to *z*, &c. ; but the ray that impinges upon *u* will be reflected to E, while that which first touches *z* will be reflected to *y*, and from thence to E ; and so of all intermediate rays, which are omitted in the figure to avoid confusion. It is evident, therefore, that the sound at E will be much stronger than if it had proceeded immediately from M, without the assistance of the dome ; for, in that case, the rays at *z* and *u* would have proceeded in straight lines, and consequently could never have arrived at the point E.”



“ I have understood that a similar effect may be witnessed in the stone recesses on Westminster-bridge,” said the vicar.

“ That is the fact,” replied Mr. Seymour. “ The recesses to which you allude are semi-domes ; and if a person whispers in the focus of one of them, he will be distinctly heard by another stationed in the focus of the opposite one. Two inanimate busts may be thus made to appear as if holding a conversation, by placing them in the foci of two large concave mirrors constructed of pasteboard, and arranged opposite to each other ; when a whisper uttered to the one will seem to proceed from the other by the reflection of sound.”

Mr. Seymour now removed a shell from a group of corallines which decorated a part of the temple, and desired Tom to place it to his ear.

“ I hear a noise which appears to me to resemble that of the sea,” cried Tom.

“ Ay,” said the vicar, “ and there is a popular belief that it is the murmur of the sea, which the shell actually sends forth ; betraying, as it were, its marine origin, just as the conversation of a retired tradesman, however polished his

exterior may become, will still savour of the shop."

"And what produces the sound?" enquired Louisa.

"The interior of the shell merely concentrates, and thus multiplies the sounds around us, so as to render them audible; a goblet applied to the ear will be found to produce the same effect," replied her father.

"I suppose it is upon the same principle that the speaking trumpet is made to convey sound to a distance," remarked Louisa.

"Since sound radiates in all directions, it follows, that, if such radiation be prevented by confining it in tubes, it may be carried to a great distance, with very little diminution of its effect; and hence the use and application of those trumpets, or tin speaking-pipes, which are now commonly used for conveying intelligence from one part of a house to another. The trumpet used by deaf persons acts on the same principle; but as the voice enters the trumpet at the large, instead of the small end of the instrument, it is not so much confined, nor is the sound so much increased."

"I believe," said Mrs. Seymour, "that the

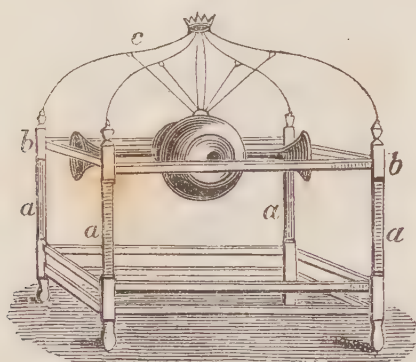
experiment exhibited some time since in London, under the title of the *Invisible Girl*, and which excited such general curiosity, was discovered to depend upon an arrangement of this kind."

"I expected that you would allude to that exhibition," said Mr. Seymour; "and as I was anxious to provide my young pupils with some new amusement, as a reward for their industry, I have directed Tom Plank to construct the necessary apparatus for exhibiting and explaining the deception. On our return to the lodge I have no doubt we shall find that every arrangement for the performance has been completed."

Miss Villers was now gratified by a view of the more interesting specimens in the geological temple. Mr. Seymour also explained the design of the pillars which had so greatly excited her curiosity.

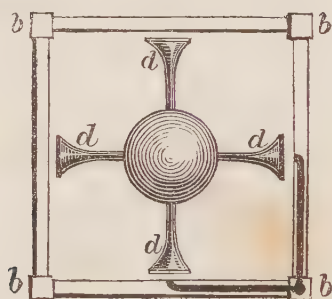
On the return of the party, Mr. Seymour found, as he had anticipated, that the necessary apparatus for the experiment of the "Invisible Girl" had been duly arranged, and that Tom Plank was in attendance to afford any assistance which might be farther required. We shall proceed to describe all the visible mechanism,

as it appeared to the children on entering Mr. Seymour's study, and of which we here present the reader with a perspective sketch.



It consisted of a wooden frame, not very unlike a bedstead, having four upright posts, *a a a a*, and a cross rail at top and bottom to strengthen them. The frame thus constructed stood upon a low table, and from the top of each of the four pillars sprang four bent brass wires, which converged to the point *c*. From these wires a hollow copper ball was suspended by ribands, so as to cut off all possible communication with the frame. The globe was supposed to contain the invisible being, as the voice apparently proceeded from the interior of it; and for this purpose it was equipped with the mouths of four trumpets, placed round it in a horizontal direc-

tion, and at right angles to each other, as shown in the annexed section,



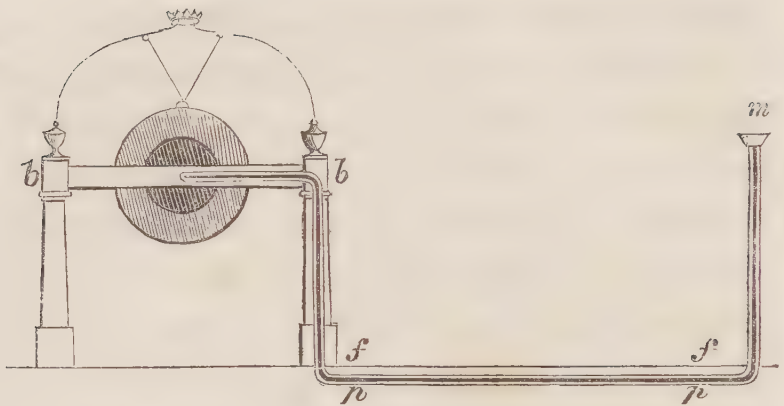
in which the globe is represented in the centre, *d d d d* are the trumpets, and *b b b b* the frame surrounding them, at the distance of about half an inch from their mouths. Such as we have described was the apparatus, which had been constructed under the direction of Mr. Seymour, who informed the party that, if any of them would ask a question of his little fairy, and direct the voice into one of the trumpets, an answer would immediately be returned from the ball.

“ Let me interrogate her,” exclaimed Louisa, as she advanced towards the railing. “ Tell me, mysterious being, the name of the person who now addresses you.”

“ Miss Louisa Seymour,” answered a voice sufficiently audible to Louisa, whose ear was near the mouth of the trumpet, and yet so distant



and feeble, that it appeared as if coming from a very diminutive being, and thus heightened the deception. Each of the party successively asked some question ; and the surprise of the children may be more easily imagined than described. Tom examined the ball, the trumpets, and the framework ; but he was unable to discover any clue by which he could unravel the mystery. At length Mr. Seymour proceeded to the explanation. He told them that the mechanism owed its effects to the combined operation of two principles with which they were already acquainted ; the concentration and conveyance of sound by means of a speaking-pipe, and its reflection from an appropriate surface so as to change its apparent direction, by producing an artificial echo. He then showed them the pipe which was concealed in one of the legs of the frame, and explained in what manner the voice of Tom Plank, who had been stationed in an adjoining room, was conveyed to the mouth of the trumpet, and thence reflected to the ear of the observer. By means of the annexed section, we shall hope to render this subject as intelligible to our readers, as did Mr. Seymour to his little pupils.



*b b* represent two of the legs of the frame, one of which, as well as half the rail, is made into a tube, the end of which opens immediately opposite to the centre of the trumpet. This hole is very small, and concealed by mouldings; the other end communicates by a tin pipe, *pp*, which passes, in a concealed manner, along the floor of the room, into an adjoining closet, where the confederate is concealed. It is evident that any sound, directed into the mouth of the trumpet, will be immediately reflected back to the orifice of the tube, and distinctly heard by a person who places his ear to the mouth of the funnel *m*; while the answer returned by him, travelling along the tin funnel, *pp*, will issue from its concealed orifice, and striking upon the concave surface of the trumpet, be returned to the ear

as an echo, and thus appear as if it had proceeded from the interior of the ball.

The vicar observed, “ that this deception of the *Invisible Girl*, which had formerly created so much interest, was little more than the revival of the old and well-known mechanism of the *speaking bust*, which consisted of a tube, from the mouth of a bust, leading to a confederate in an adjoining room, and of another tube to the same place, ending in the ear of the figure ; by the latter of which, a sound whispered in the ear of the bust was immediately carried to the confederate, who instantly returned an answer by the other tube, ending in the mouth of the figure, which therefore appeared to utter it. The *Invisible Girl*,” continued the vicar, “ evidently only differs from that contrivance in this single circumstance, that an artificial echo is produced by means of the trumpet, and thus the sound no longer appears to proceed in its original direction.”

“ Your remark is perfectly correct, my dear vicar,” said Mr. Seymour.

Tom Plank, with an air of self-satisfaction, at this moment emerged from his retreat, and

enquired whether his performance had not met with the approbation of his employer.

“ You have performed your part extremely well,” replied Mr. Seymour; “ and I have only to add that, if luggage could be made to travel through pipes with as much ease as sound, you might safely anticipate the possession of that large fortune which the vicar has conditionally promised you.”

“ Ah ! your worship,” exclaimed the disappointed carpenter, “ the scheme has completely failed. Ned Hopkins returned yesterday morning. He was terribly ridiculed by the philosophers in London, and he declares that he will never again run the risk of burning his fingers with any pipes, except those in which he smokes his tobacco.”

“ Ned Hopkins is a pleasant-tongued wag,” observed Mr. Seymour ; “ and though he is as idle and drunken a dog as ever infested a neighbourhood, I believe that, after all, he is an enemy to no one but himself.”

“ Your defence of that man always astonishes me,” exclaimed the vicar.

“ Gentlemen,” said Tom Plank, “ as I am now fully satisfied that my plan of propelling

live and dead luggage through funnels can never succeed in the way I propose, another scheme has come into my head. Cannot I use my tubes for conveying sounds to a great distance, so as to do away with the use of telegraphs?"

"Why that plan is more practicable, but less novel, than the one you have just abandoned," answered Mr. Seymour. "At the latter end of the last century, a man of the name of Gautier conceived a method of transmitting articulate sounds to an immense distance. He proposed the construction of horizontal tunnels that should widen at their extremities, by means of which the ticking of a watch might be heard more distinctly at the distance of two hundred feet than when placed close to the ear. I think he calculated that a succession of such tunnels would transmit a verbal message nine hundred miles in an hour." (13)

"Only think of that," ejaculated Tom Plank; "to make a communication from London to Edinburgh in about twenty-five minutes!"

"There now," cried the vicar, "you have supplied Tom Plank with some fresh barm to set his brains working."



“ He is an indefatigable fellow, I must allow,” said Mr. Seymour.

“ I never have accused him of want of industry, but of its unprofitable application,” replied Mr. Twaddleton. “ Tom Plank,” continued he, “ let me once more recommend you to return to your trade ; sow where you can reap ; we cannot have figs from thorns, nor grapes from thistles ; and how can it be expected that a person, unacquainted with the first elements of science, should invent schemes which require, for their accomplishment, a knowledge of its most recondite principles ; remember the proverb, ‘ An emmet may work its heart out, but can never make honey.’ One more piece of advice, and I have done. I understand that you are encouraged in these pursuits by the several artists whom you employ for furnishing you with materials. Is it not natural that the iron-founder, who lives by manufacturing pipes, should applaud any scheme that may increase the demand for them ? The dog wags his tail, not for you, but for your bread.”

“ I consider, Tom Plank, that you are bound to relinquish your scientific speculations,” said Mr. Seymour. “ It was distinctly understood

that, if Ned Hopkins realised any money by his scheme, the vicar should ensure to you double the amount, on the expressed condition that, if it failed, you should at once return to your calling, and never again enter into such foolish speculations."

"I am content, gentlemen; I see my folly, and have suffered from it," replied the carpenter.

The vicar expressed great satisfaction at this honest declaration, and hoped that his example might serve as a warning to the other mechanics in the village.

"Ah! sir," said Tom Plank, mournfully, "I fear that the warning will come too late."

"I fear so too," observed Mr. Seymour, "if the information which I have just received be true. I understand that Will Snaffle was arrested this morning by a ship-builder, who has sent him to the *Fleet*; — that Sam the watch-maker, being unable to *tick* any longer, has come to a stand, till he can *wind up* his affairs; and I greatly fear that poor old Roger Naylor cannot live much longer upon the *elements*; certain it is, that he has never been able to *raise the wind*, since he deserted his bellows."

“And so ends this eventful history,” cried the vicar. “My predictions have indeed been verified in a shorter time than I had allowed for their accomplishment. Ah ! Mr. Seymour, what can you now say in defence of village education ?”

“What I have always said, and still continue to repeat ; that the sum of happiness and virtue in a state will be increased by a general diffusion of science amongst the working classes. Are you to argue against the utility of a system from a few instances of its abuse ? ‘ *Abusus non tollit usum*,’ as the Latin proverb expresses it. But as we are not likely to agree upon this question, I must decline all further controversy.”

The party now dispersed. Miss Villers retired into the drawing-room, to afford Louisa some musical instruction ; the vicar took his departure for the sake of visiting a sick patient ; and Tom Plank returned to his bench, which he resolved never again to desert.

It was nine o’clock, before any opportunity occurred which enabled Miss Villers to withdraw herself from the domestic circle, for the purpose of fulfilling the determination she had made to revisit the valley by moonlight. The evening

was beautifully serene, and, in every respect, rivalled in loveliness the one that had preceded it. She sallied forth unperceived, and tripped along with airy steps in the direction of the shrubbery. The moon, which had but just risen, tipped the summits of the wood with silver, but left the mass of foliage in deeper shadow. Isabella having traversed its winding path for some time, at length found herself in one of those sequestered glades we have formerly described, and which, like beautiful episodes, furnished an object upon which the mind might agreeably repose, and find relief from the tedium which a continued uniformity of subject, whether in the progress of a poem, or the path of a wood, is so apt to engender.

To one possessed of the quick sensibility which characterised the mind of Isabella Villers, a scene better calculated to awaken the emotions of the heart, and the energies of the imagination, could not have presented itself. The hour too was propitious to the indulgence of that species of melancholy reflection which has in it something even sweeter than pleasure. She seated herself on a rustic bench, tastefully formed out of an aged oak, whose venerable figure was bending

under the hand of Time ; and her mind was gratefully lulled into a pensive calm by the review of past events, as the ear is soothed by the murmur of wild and distant music. A sudden breath of wind, as it swept the foliage, startled her, and turned the current of her ideas ; the contemplation of past scenes was exchanged for that of future prospects. It is true, thought she, that those favours of fortune, which are prized by the selfish world, have, with her characteristic caprice, been unexpectedly showered into my lap ; but is not the only being, for whose sake I should have valued them, in the cold, cold grave ? Can I look forward to the future but as a wild and dreary waste, which I must traverse without an object, and without a companion ; for has not the tomb closed upon the beloved object of my affections ? As this melancholy idea seized her brain, and sent her blood in icy currents through her veins, the moon, as if in sympathy, suddenly peered through the sylvan avenue, and threw its rays upon one of those statues which we have already described as giving such an air of classic sanctity to these secluded glades. It was the figure of TIME, which in the gloom of the



evening had hitherto escaped her observation. To a mind of exuberant fancy, a leaf cannot fall to the ground, nor a zephyr waft the fragrance of the violet on its dewy pinions, without conveying some emblem of beautiful morality. She rose from her seat, and approached the figure, whose hoary countenance appeared as if lighted up into a placid smile by the beams of the moon, which fell directly upon it. There, thought she, stands Time, at once the friend and foe of mortality. Oh, that he would unfold his mystic volume that I might read the fate which awaits me! As she mentally ejaculated this fervent wish, her eye glanced from his face to his scythe; its blade was hidden by a garland of roses, with which Louisa Seymour, to indulge the fancy of her mother, had gracefully entwined it. Were I susceptible of superstitious impressions, thought Isabella, I should receive this as an omen of happier prospects. But no — no — what balm can heal the wounded heart? what spell can ever root out the worm which rankles at its core? Not even Time, all-conquering Time, could achieve such a triumph.

Upon the pedestal of the figure was a basso relievo, in which Time appeared in the act of

shivering into pieces the club of Hercules with a crutch. Isabella fixed her eyes upon the sculpture; a languid smile flitted across her countenance, and she turned aside into the path which she thought would conduct her to the valley. She soon, however, discovered from the gradual ascent of the ground, that she was receding from the spot she wished to reach. A passing cloud had intercepted the light of the moon, and all nature seemed sinking into profound repose. Startled by the rustling of her own garments, or by the faint echo of her footsteps, she felt a momentary fear which almost induced her to relinquish her design, and return at once to the lodge. For a moment she hesitated, — she turned to retrace her steps, and perceived a cross path, at a little distance, which she knew would lead her to the valley. Ashamed of the feeling which had, for a moment, shaken her determination, she proceeded; and in a few minutes arrived at the very spot where on the preceding evening she had heard her own name — she paused. Not a sound disturbed the sabbath stillness of the scene, save the pulsations of her own heart which, notwithstanding the efforts she made to tranquillise her spirits, beat with

rebellious fervour — hush! — what have I to fear? thought she; I will therefore try whether the rocks will return my name; and with a feeling very like that which induces the villager to sing and whistle as he passes through the church-yard at midnight, in a tremulous but elevated tone she pronounced — ISABELLA VILLERS.

Ere the caves of echo could catch the sound, a human voice, in the direction of the temple, repeated, in accents of the wildest surprise, “Isabella Villers! — oh heavens, who on earth now bears that sainted name?”

The stranger, as he uttered this exclamation, rushed from the temple, and approached the terrified Isabella, just in time to catch her in his arms, as she uttered a faint shriek, and fell lifeless. He extended her on the sloping turf, and in order to chafe her temples removed the raven ringlets which had gathered in a dark crowd about her face.

“Ye gracious powers,” exclaimed he, “is this valley the abode of fairy spirits, who mock despairing lovers with the spectral forms of those whom the grave has enclosed! No, no, no, — it is Isabella herself,” cried he, as he threw himself at her feet, in the wildest trans-

port, — “ my life ! — my love ! — It is thy adoring lover — it is Henry Beacham, whose arms enfold thee — rouse — rouse thee — my Isabella — oh heavens ! how have I been deceived by that villain Wilcox ! ”

These exclamations produced some effect upon the insensible Isabella ; a tremulous motion of her lips preceded the opening of her eyes, which at length unclosed ; but as yet their glance was dim and chill ; — a sigh escaped her ; — it was the herald of returning life.

“ Has heaven such happiness in store for one, who a few moments since regarded herself as the most wretched of mortals — oh Henry, can it be my lamented, long lost Henry ! ” faintly exclaimed Isabella.

“ It is, it is,” replied the lover, as he clasped her in his arms.

We shall not trust ourselves any farther in attempting to analyse the sensations of the lovers at this electrical moment. Words were made for less occasions ; — nor shall we venture to follow the sparkling stream of impassioned language which flowed after the first impulse of amazement had subsided. For the information, however, of our readers, it is necessary that we

should relate the explanation which the lovers mutually exchanged. Isabella Villers, as those accustomed to the machinery of romance will probably have anticipated, was the accomplished and beautiful lady for whom Henry Beacham, the nephew of Major Snapwell, had formed so ardent an attachment. The displeasure of the uncle, the intercession of Wilcox, and the shipwreck of the disappointed lover, have been already related; it is therefore only necessary to add, that he was miraculously saved from a watery grave by the humane exertions of an English sailor, who seized him in the water, and never quitted his hold until he had reached the shore. Henry, however, had unfortunately received a violent blow on the head from a mast as it fell overboard, which occasioned a state of insensibility for several days, and confined him to his bed for many weeks. As soon as he had sufficiently recovered, he left Genoa, and by easy stages returned to England. On his arrival in London, fearing that his abrupt appearance might overcome his uncle, he proceeded to the chambers of Wilcox, with the intention of desiring him to disclose the event with caution. On his interview with the wily attorney, he was



extremely shocked to learn that the report of his shipwreck and death had reached the ears of his uncle, and that the worthy major had been so affected by the intelligence as to have fallen into a dangerous state of health, for which he had been advised by his physicians to travel on the Continent. To all enquiries with respect to the route and destination of Major Snapwell, Wilcox returned an evasive answer. His uncle's object, he said, was variety of scene, and it was therefore impossible to say in what part of the Continent he was to be found; that any attempt to follow his route would inevitably delay their meeting; that the plan he should, with submission, propose, would be for Mr. Beacham to await the major's return with patience; and that he would himself take such measures as were best calculated to expedite the accomplishment of his wishes. He added, that Lady Frances Hartington, whom the major so greatly desired his nephew to marry, was to be led to the altar by a Mr. Sinclair in the course of a few months, and it would, therefore, be advisable that his escape from shipwreck, and return to England, should be carefully concealed, until after that event; such at least is the advice, said Mr.

Wilcox, that I venture to offer for your consideration.

His enquiry after Miss Villers was answered by a shake of the head, and a deep-drawn sigh ; he then communicated with much apparent feeling the illness and death of that young lady, which so affected poor Beacham as to occasion an illness which must have prevented his seeking his uncle, had he even determined upon the expediency of such a measure. On his recovery, by the advice of the lawyer, but much against his own judgment, he retired into the neighbourhood of Overton, and in order the better to ensure concealment, assumed the name of Richdale. The reader already knows how tenaciously Mr. Beacham preserved this incognito : he had declined all intercourse with the neighbourhood ; the repeated invitations of Mr. Seymour to join the circle at the lodge had been stoically rejected, lest the secret of his situation might have been accidentally betrayed. He had sought amusement from intellectual pursuits, the botany of the neighbourhood proved an inexhaustible source of delight ; the permission, kindly granted to him by Mr. Seymour, to visit the geological temple, had also been

the means of furnishing occupation for many an hour; and during the evenings of summer he had constantly passed his time in the valley, now revelling in a luxury of thought, now listening to the soothing murmur of the waterfall, or to the wild notes of the nightingale. After a certain period of his retirement, however, for reasons which Mr. Beacham could never discover, Wilcox became anxious that he should change his residence, pressed him to depart to the Continent, and advised the prosecution of those very measures for the discovery of his uncle, which he had a short time before so strenuously opposed. It will be remembered that he had been suddenly summoned from Overton by the arrival of a special messenger; that he went to London without loss of time; when, on his arrival, he was informed by Wilcox that he must instantly depart for the Continent to join his uncle, who was impatiently awaiting his arrival. Henry Beacham readily acquiesced in the arrangement, but determined, without the knowledge of Wilcox, to return once more to Overton, before his departure, in order to collect the papers and memorandums which he had heedlessly left at his lodging. In this deter-

mination we might almost discover the finger of fate ; for, had he left England as his counsellor desired, the happy discovery, which we have lately described, might never have taken place.

Having thus briefly related the circumstances which Henry Beacham communicated to Isabella Villers, we shall, with as little circumlocution, put the reader in possession of those facts which Isabella in return imparted to her lover. She informed him that, shortly after the report of his death, she had been seized with a violent fever, and remained in a state of melancholy for several months. She was placed under the protection of her aunt, and the first intelligence she received upon her recovery was the unexpected death of her cousin, Lord Stenton, who had bequeathed to her a fortune of not less than forty thousand pounds. She had seen Wilcox several times, and he had informed her that Major Snapwell would never suffer her name to be mentioned in his presence ; that he regarded her as having been the cause of his nephew's death, and that he could not answer for the effect which might be produced upon him by their meeting, he therefore hoped that Miss Villers, as the only mark of respect which she

could pay to the memory of Henry Beacham, would cautiously abstain from any measure that might bring them into contact. "God knows," added Miss Villers, "how anxiously I have endeavoured to fulfil the promise thus extorted from me." She then enquired whether Major Snapwell was in England, to which Henry Beacham replied that he believed he was at Geneva. "Whither," said he, "I was about to proceed, and had not the happy discovery of this evening taken place, I should, undoubtedly, have quitted Overton before to-morrow's sunrise."

The lovers now consulted upon the measures they should adopt. Isabella urged the impropriety of Henry's appearance at the lodge, without the approbation of Major Snapwell, and the sanction of her aunt Lady Cremore, under whose protection she had been placed. Harry Beacham, with the ardour of a lover, very naturally contested this point; and it is difficult to say whether reason or feeling would have gained the ascendancy, had not an event occurred which fortunately transferred the question to a higher tribunal for decision. A blaze of light suddenly glared upon the seat on



which they were sitting, and, in the next moment, Mr. and Mrs. Seymour, with several servants bearing torches, stood before them.

“My dear Isabella,” cried Mrs. Seymour, “how can you thus alarm us? It is past ten o’clock, and your long absence has occasioned considerable uneasiness.”

“Heyday!” cried her husband, in a voice of mingled astonishment and displeasure; “Mr. Richdale here!”

“Yes, sir, he whom you have known as Mr. Richdale, appears before you under circumstances which may well excite your surprise; but do not, I beseech you, for one instant, entertain a thought to the disparagement of Miss Villers.”

“Fear not, my good sir,” replied Mr. Seymour; “my confidence in her prudence is too deeply rooted to be shaken by a passing breath; but explain.”

“That will I do most readily, if you will allow me to accompany you to the lodge; but that I may not enter your hospitable mansion under false colours, know that, for reasons which you shall presently learn, the name of

Richdale has been assumed ; my true name is Henry Beacham."

" Henry Beacham ! the nephew of Major Snapwell !! " exclaimed Mr. Seymour, in a tone of the greatest surprise.

" The same, sir ; but as mine is rather a long and eventful story, with your permission I will defer the relation of it until we shall have arrived at the lodge."

The party, preceded by the torch-bearers, wound their way through the mazy paths of the shrubbery, and, in less than a quarter of an hour, were seated in the drawing-room. Mr. Beacham then related all the circumstances with which the reader is acquainted ; and as Mr. Seymour was already in possession of Major Snapwell's history, he was enabled to supply the necessary links for rendering the chain of evidence complete, and for proving, beyond a doubt, the arch villany of Wilcox, through whose nefarious intrigues the uncle and nephew had been so long kept asunder.

" I suppose you know," said Mr. Seymour, " that Major Snapwell has been resident in this neighbourhood, and has purchased Osterley Park."

“ In this neighbourhood !” exclaimed the nephew, “ never until this moment have I heard it. Wilcox has always assured me that he was on the Continent; and, indeed, I had made arrangements for quitting Overton to-morrow morning, for the purpose of joining him at Geneva.”

“ Why, surely, the ‘ major,’ of whom I have so frequently heard you and the vicar speak, can never have been Major Snapwell,” observed Miss Villers.

“ Indeed it cannot have been any other person,” replied Mr. Seymour.

“ I am all amazement,” said Miss Villers.

“ It is now sufficiently evident why Wilcox has been so impatient to send me abroad,” observed Mr. Beacham.

“ And why Wilcox has thrown so many difficulties in completing the purchase of Osterley Park,” added Mr. Seymour.

“ And where is my worthy uncle at present?” eagerly enquired Mr. Beacham.

“ At Holding’s hotel, in Dover Street, whither I advise you to proceed without delay; but let your movements be concealed from that wily attorney. On your arrival in London cautiously

present yourself to your uncle, but, should he be at Gray's Inn, await his return at the hotel. After relating to him all the circumstances of the case, he will pursue such measures, relative to Wilcox, as he may deem most prudent. He will probably wish to take him by surprise, in order to secure the property that may remain in his hands."

"I shall set off at daybreak," replied Mr. Beacham, who then bid farewell to the party, and returned to Upland Cottage.

The series of events which had transpired during the last two hours had not allowed Miss Villers a single moment for reflection, and her spirits, hitherto supported by such extraordinary mental stimulus, now that Harry Beacham had departed, began to droop. Mrs. Seymour anticipated such a result with some anxiety, and she therefore kindly accompanied her to her room, with the determination of watching her until she should fall asleep. No sooner had the young lady reached her apartment than she threw herself upon the sofa, and gave vent to a burst of feeling which indicated a state of excitement almost bordering upon delirium. She spoke of her visit to the valley, as though it

had been brought about by the interposition of some supernatural agent; described in a most exaggerated manner, and with a wildness of expression that greatly alarmed her friend, the adventure at the statue of Time, declaring that the figure had smiled upon her, and pointed with his marble finger to the scythe; the blade of which, she said, immediately sank beneath a bed of roses. Mrs. Seymour did not attempt to repress these flights of the imagination; she well knew that any discussion would tend to increase the feverish state of excitement under which she laboured, and that sleep alone could restore her mind to tranquillity. She therefore prevailed upon her to retire to rest; and, after the lapse of an hour, had the satisfaction of finding that she had fallen into a quiet slumber. She then drew the curtains around her bed, and quitted her for the night, in order that she might seek the same balm, of which her own agitated spirits so greatly stood in need. With your permission, gentle reader, we will follow her example; for our lamp, that midnight sun which illumines the path of the author, is dimmed by the dark clouds that lower at its setting; our Pegasus, the pen,



which has raced for so many hours over the dreary plains of foolscap, is fairly "done up," and refuses any longer to drink of that spring which can alone invigorate its drooping spirits. Nor have we ourselves escaped from the general exhaustion, we therefore desist, or, like our lovely heroine, we shall run the risk of becoming confused and incoherent.

## CHAP. VIII.

THE VICAR PAYS HIS DIURNAL VISIT, AND IS CONFOUNDED BY THE INFORMATION IMPARTED TO HIM. — MAJOR SNAPWELL'S LETTER READ AND DISCUSSED. — THE MEASURES THAT WERE TAKEN IN CONSEQUENCE OF IT. — MISS VILLERS VISITS OSTERLEY PARK. — A CONVERSATION, DURING WHICH THE VICAR DISPLAYS MUCH LOGICAL ACUMEN TO THE DISPARAGEMENT OF FIELD SPORTS. — MUCH ANXIETY RELIEVED BY THE RETURN OF MR. SEYMOUR. — AN ACCOUNT OF VERY IMPORTANT PROCEEDINGS IN LONDON. — THE FLIGHT AND DISGRACE OF WILCOX. — THE MAJOR AND HIS NEPHEW RETURN TO OVERTON.

A NIGHT of undisturbed repose had restored the mind of Miss Villers to its wonted serenity. She entered the breakfast room with the elastic step of a sylph, and with a countenance irradiated with smiles. Never before had she appeared so lovely; the discovery of the preceding evening having removed the weight by which her heart had been so long oppressed, her disencumbered spirits sparkled to the surface with all the briskness of intellectual effervescence.

With the account which Mr. Seymour gave of the character of Major Snapwell, she was delighted; and on learning the true state of his feelings with respect to herself, a glance, which made silence eloquent, expressed the overflowing gratitude of her heart.

“How cruelly have I wronged my best friend,” exclaimed she, “in allowing myself to entertain such unjust suspicions! I was, surely, much to blame in listening to the representations of Wilcox. After the reported death of his nephew, it was my bounden duty to have sought an interview, to have made every exertion to soothe those sorrows with which I had been the unhappy means of overwhelming him. Oh, Mr. Seymour, I shall never be able to reconcile myself to such apathy!”

“Nay, my dear Miss Villers, your conduct upon that occasion was dictated by the strictest sense of propriety, and accorded with the most refined feelings of delicacy. You could not have acted otherwise than you did. You are reasoning, as if the sincerity of Wilcox had appeared questionable. He was the confidential friend and adviser of the major, and you were

bound to be guided by his representations. The circumstances of the case, however, will shortly be cleared up to the satisfaction of all parties. Harry Beacham is at this moment on his road to London, and I have little doubt but that he will return with his uncle in the course of two or three days. In the mean time, I should advise you to communicate all the particulars of the late happy disclosure to your aunt, Lady Cremore, and to express the strong desire we feel that she should, without loss of time, join our party. To your guardians also it would be proper that you should make a similar communication; their presence will be necessary for the completion of those arrangements which, I feel satisfied, the major will be most impatient to put in train, the very moment he becomes acquainted with his nephew's return and your safety."

A faint blush overspread the features of Miss Villers; but the attention of the party was fortunately engaged, at that moment, by the propitious entrance of Mr. Twaddleton.

"What is all this I hear?" exclaimed the worthy vicar. "A report is spread in the village that some unexpected discovery has been made

with respect to the mysterious being, Mr. Richdale, and that he quitted Upland Cottage in a chaise and four at sunrise."

" Sit thee down, my dear sir, and prepare yourself for one of the most extraordinary disclosures that ever electrified the ears of a novel reader. Mr. Richdale turns out to be the long lost Harry Beacham."

" Harry Beacham ! what ! the nephew of Major Snapwell ! ! "

" The same ; and this discovery, so providentially brought about, has at the same time disclosed a scene of iniquity, which I cannot believe to have been ever equalled in the annals of legal intrigue."

Mr. Seymour now circumstantially related the story, which we have communicated to the reader in a preceding chapter. It would be impossible for any language, however eloquent, to convey an adequate idea of the feelings of the vicar upon this occasion ; equally futile would be any attempt to delineate the varying expression of his countenance, as it now mantled with the smile of satisfaction, and now lowered with the cloud of indignation.

" I am not the least surprised at the disclo-



sure of Wilcox's villany," said Mr. Twaddleton. "I always felt convinced that he was one of those shrewd and unprincipled knaves, who use the law, as the ancient Greeks are said to have used their shields, to pursue to destruction those opposed to them, by the very instrument which threw protection around their own persons. By combining the facts already communicated to us by the major, with those you have lately obtained from Mr. Beacham, the secret spring of his actions is at once exposed; while we are furnished with a clue, which will enable us to follow him through all the intricate and dark windings of his intrigue. The slight spark of misunderstanding which arose between the major and his nephew, the cold and calculating attorney contrived to fan into a blaze; and he seized that occasion to press the propriety of Beacham's departure to the Continent. '*Divide et impera*' was his motto: for he felt that, if he could only once secure the separation, time and opportunity would enable him to complete the alienation; and that the major and his affairs would, in such a case, be at his entire disposal. The report of the shipwreck was an event which, doubtless, exceeded his most san-

guine expectations of success, and induced him to take such measures as might prevent any interview between the major and Miss Villers : to the former, therefore, he reported her death, and to the latter he made such representations as were calculated to extinguish any wish she might feel to meet the uncle of her late lover. You already know," continued the vicar, " the will which the *trusty* agent induced his too confiding client to execute. The safe arrival of Beacham must have been a thunderbolt ; but mark with what address he contrived to avert the mischief that must have followed its explosion. He persuaded the nephew to assume a false name, under the pretext that such a measure could alone protect him against a repetition of those unwelcome proposals from his uncle, which had unhappily produced their separation. Miss Villers, he said, was dead ; and thus did he effectually close every avenue, from which a ray of light might have issued to show him the real position in which he stood. The major, be it remembered, was at this period on the Continent, and in an alarming state of health : could the meeting be only postponed for a few months he might die ; and the will in his pos-

session would then entitle him to a very considerable sum of money. As soon as he discovered that the major had, without his knowledge, accidentally taken up his abode in the very country where his nephew was residing, it is clear that he exerted every stratagem to prevent a meeting which must have been at once fatal to the success of his well-concerted plan. Mr. Richdale was hastily summoned to London; was urged to depart to Geneva without a moment's delay, where his uncle was said to be impatiently awaiting his arrival. It was by the merest accident that he had not so departed, and have left Wilcox to the triumph of his villany; for, depend upon it, Mr. Seymour, that a man who had the art to conduct the scheme thus far, would not have hesitated in accomplishing, by stratagem, that which the world believed had already been effected by shipwreck."

"You have given a very plausible, and, in my opinion, a very just account of the views which must have actuated Wilcox through the whole of this nefarious proceeding; but his immediate disgrace and ruin are now inevitable."

"Not so immediate, I fear, as you may sup-

pose," replied the vicar ; " read the letter which I have just received from the major."

Mr. Seymour then received the epistle from the hands of Mr. Twaddleton, and read as follows : —

" Holding's hotel, August 30.

" My dear Vicar,

" After numerous delays, I have this day finally concluded the purchase of Osterley Park, and the conveyance has been duly signed, sealed, and delivered. I know your opinion of Wilcox ; but you have really, my dear sir, greatly mistaken his character. If my obligations to him have hitherto been beyond all compensation, what will you say, when I inform you that, through his kind and persevering efforts, some faint ray of hope of my nephew's safety has been elicited ; but I cannot believe that it is possible. Had his life been providentially spared, he must have arrived in England, or, at all events, some direct communication must long since have reached us. But you will naturally enquire, upon what circumstance this hope, weak as it may be, has been founded. Wilcox tells me that the captain of a merchant vessel, freighted from Genoa, was heard to relate

a shipwreck in which a young Englishman was miraculously saved. At any rate, I have been persuaded by my kind and anxious friend to proceed immediately to Italy; and it is probable that, before this letter reaches Overton, I shall be once more adrift, in pursuit of a bubble, on the wild ocean of adventure. You shall, however, hear of me again from Calais. Pray, present my affectionate remembrances to the circle at the lodge." &c. &c.

"His *kind friend* Wilcox," repeated the vicar, with a sarcastic smile. "Upon my word, that miscreant plays his cards with exquisite address; finding that the delay of Henry Beacham might lead to a fatal discovery, he has prudently sent the major out of the kingdom."

"But what is to be done?" asked Miss Villers, in great agitation.

"I trust that Beacham will be in time to prevent the accomplishment of his plan," said Mr. Seymour.

"Depend upon it that Wilcox will be on the alert; and he will not deserve that character for wily intrigue, for which we have given him such ample credit, if he does not baffle the plan



upon which you appear to place so much confidence," said the vicar.

"I confess my fears upon that head," observed Mr. Seymour; "and as Tom's holidays have expired, I will to-morrow take him to school, and afterwards pursue my journey to the metropolis."

In accordance with this plan did Tom and his father quit Overton on the following morning, leaving the family in a state of the most anxious suspense until the arrival of the post, which was to bring them some intelligence. A portion of this interval was spent in a visit to Osterley Park; and as it had now become the undisputed property of Major Snapwell, Miss Villers viewed each object with reference to its capabilities of improvement: here, thought she, may the brook that meanders along yonder copse be easily expanded into a glassy lake; that line of forest trees gives too great an air of uniformity to the scene, it must be broken into rich clumps of foliage.

"And pray, Mr. Twaddleton, who may this Sir Thomas Sotherby be, of whom the major has purchased the estate?" enquired Miss Villers, as she walked across the lawn before the house.

“ A wealthy citizen and cheesemonger, who, having received the *honour* of knighthood for presenting some loyal address, considered the possession of a country residence as essential to the support of his newly acquired dignity. As for my part, Miss Villers, I regard titles as I do the epithets of Homer, neither of which were intended to honour the individual, but to make him conform with the line in which fate or the poet may have doomed him to figure. When otherwise applied, what are they but senseless expletives? Never was this truth more forcibly illustrated than in the present instance. As Thomas Sotherby, of Crutched Friars, he was universally and justly respected; while as Sir Thomas of Osterley Park, he became an object of envy with the class he deserted, and of contempt and ridicule with that to which he aspired to ally himself.

“ I thought,” said Miss Villers, “ he was a great sportsman.”

“ He purchased horses and dogs, and hired huntsmen to pursue the foxes; not, however, from any pleasure which the sport afforded him, but because he deemed it necessary for the support of his newly acquired rank in society. I

understand that Lady Sotherby once told Dr. Doseall in confidence, she verily believed, if it were possible, that Sir Thomas would gladly compromise his field *pleasures* at the expense of being dragged through his fishpond twice a week; — ‘but, you know, doctor,’ observed the lady, ‘he has a character of gentility to support, and a body can’t have his cheese without paying for it.’”

“Poor soul,” cried Miss Villers; “no wonder that he should have been so anxious to dispose of his estate and its rural delights.”

“Do not mistake me, Miss Villers,” said the vicar; “I value the knight not an iota the less for his dislike to hunting, but I despise the weakness which could induce him to pursue, from a desire of *éclat*, an occupation which gave him real annoyance. With respect to this said diversion of Diana, I never could discover the principle upon which its vivid pleasures can be supposed to depend; and yet I do assure you, madam, I have not failed to submit the subject to a logical examination. Thus, for instance; the fox emits from his body certain odorous particles, that is my *major*, I say *concedo*, well; the structure of the olfactory organs of

the canine species enables them to perceive this odour, that is my *minor*, and I say again *concedo*; but I should much like to hear how any logician can defend the consequence which is generally deduced from these premises; or to speak more syllogistically, why am I pleased to put my neck in jeopardy *because* my dogs happen to perceive a smell?"

Miss Villers laughed heartily at the ludicrous point of view in which the worthy vicar had thought proper to represent a sport which, as she observed, when not pursued with an ardour that the momentous duties of life can alone justify, may be commended as a healthy and manly recreation.

After the party had inspected the grounds and mansion, they returned to Overton, much gratified by the excursion of the morning. Several tedious days elapsed without intelligence from London. Had Mr. Seymour accompanied Harry Beacham to the Continent in pursuit of his uncle? or was it possible that the letters had miscarried through the wiles of Wilcox? The silence was totally inexplicable, and every attempt, which was made to explain it, only threw additional doubt and mystery

over the circumstance. At length, a carriage was heard rolling along the avenue. At the first impulse of its sound the whole party rushed with breathless anxiety to the portico ; for, faint as was the murmur of its wheels, it was immediately recognised. It was a postchaise ! An age seemed to elapse between its first appearance and its arrival at the hall door. Whom did it bring ? — Mr. Seymour — what, Mr. Seymour alone ! — where was Harry Beacham ? — where the major ?

“ Calm your spirits,” exclaimed Mr. Seymour, as he alighted from the carriage, “ I am the herald of good news ; Harry is with his happy uncle, and Wilcox has fled the country.”

“ Thank heaven !” ejaculated Miss Villers, as she clasped her hands, and burst into a flood of tears.

“ Come,” said Mr. Seymour, “ there is a letter from Harry that will explain all.”

Isabella received it with delight, and, placing it in her bosom, hastened to her apartment, to ponder over its contents without observation. Mr. Seymour then related all that had passed since his departure ; but as we prefer communicating the substance of this information in our



own language, we shall allow the traveller, who is no doubt wearied by his journey, to retire into the library with his family, while we detain the reader, for a few minutes, in order that he may become as well informed in all the late transactions, as the party whose history we are recording.

As soon as Harry Beacham had arrived in London, he despatched a note from Hatchett's to his uncle, at Holding's hotel, for the purpose of preparing him for the interview. He addressed him as a stranger, who, having accidentally heard of his residence, had taken the liberty to inform him that his nephew, Mr. Henry Beacham, was certainly living, and that if he would allow him the honour of an interview, he would state such circumstances as should place the fact beyond all doubt. This letter was sent by a messenger, who was directed to wait for an answer. The major, however, was from home. In the course of half an hour he sent a second note, in which the arrival of his nephew in England was positively asserted. Henry impatiently waited in the coffee-room for some reply to these communications, but not any having arrived, he had determined to proceed, at once, to

Holding's, when he heard the well-known voice of his uncle in the passage. "Waiter, waiter ! where is the gentleman who has sent two notes to the hotel in Dover Street ? I must be shown to him immediately."

"I will enquire, sir; your card, if you please," replied the waiter.

"Psha ! you jackanapes ; I am a man of no ceremony ; show me to him immediately, I say."

At this moment a small bell, directly over the head of the major, became extremely clamorous.

"Coming, sir, coming, sir; bless me, No. 5. is in a monstrous passion !"

The bell had been rung by Henry, who was desirous that his uncle should be shown into a private room ; but the precaution was too late ; the major rushed past the waiter, entered the coffee-room, and in the next moment was locked in the embrace of his nephew.

"My dear boy ; my long lost Harry," exclaimed the veteran, whose voice now became inarticulate from sobs.

"My dearest uncle, let me beseech you to be tranquil. I had hoped my notes would have prepared you for the interview."

“ And so they did, Harry,” cried the major, somewhat recovering himself; “ and most kind and considerate was the precaution; but what nerves, though bomb-proof, could stand against such an attack as this; I will, however, endeavour to command myself.”

“ When and where did you receive my notes? The waiter informed me that you were absent from the hotel.”

“ They were brought me at the chambers of Wilcox; and I can assure you their contents no less astonished and delighted that worthy person, than they did your old uncle.”

“ That worthy person!” exclaimed Harry, “ say rather that detestable viper, who has crawled into your bosom to sting your heart’s core.”

“ Harry! my dearest Harry! my boy! — speak not thus of a sincere friend; a candid, open — ”

“ A fiend! to whose diabolical machinations you are indebted for our long separation; a hyena in the semblance of a lamb.”

A full explanation then ensued. The major seemed paralysed by the discovery; he sank upon the bench; his eyes became glassy, and stared on vacancy; his limbs remained motion-

less : five minutes, at least, must have elapsed before any indication of returning consciousness was manifested, although we are well aware that the lapse of time is never more falsely appreciated than during an interval of anxiety. The first words that he uttered after his recovery were Isabella Villers.

“ What cruelty have I shown towards that poor girl ! but I thought her dead, Harry. Oh, Wilcox, thou hast indeed deceived me ! but come, let us hasten to Gray’s Inn without delay.”

“ In your present exhausted state, I fear the meeting will be too much ; let me encounter him alone, I beseech you, my dear sir,” said Henry.

“ No, no, no, Harry, I must see him myself ; tax him with his perfidy, and overwhelm him with the shame he merits. My proceedings will be very summary ; he shall instantly surrender all my property, and if his accounts are not as pure as virgin snow, I will —— but come, we must not delay a moment.”

With feelings of bitter resentment did the uncle and his nephew step into a coach which was to convey them to the chambers of Wilcox.

On entering the square they met Wigram, the confidential clerk of the attorney, who, as soon as he perceived the major, advanced towards him with an air of great dejection, and putting a sealed letter into his hand, observed that he was sorry to say that a disastrous and unexpected turn in his master's affairs had obliged him to depart suddenly for the Continent.

“ Oh the villain!” cried the major, as he opened the letter, and read as follows: —

“ Major Snapwell,

“ I know your feelings, and anticipate your wrath; but before you can read this, I shall be beyond the power of its vengeance. I shall neither explain nor extenuate my conduct: the one is unnecessary, for your nephew has, doubtless, told you all; the other would be a degradation to which it is not my intention to submit. Wigram will deliver into your hands the box which contains your exchequer bills, East India bonds, and other securities. As to the balance in my hands, it may, perhaps, amount to three thousand pounds: be this, however, as it may, I cannot refund it, and I know you do not want it. Console yourself, therefore, with the re-



flection, that, had I taken the present step only three days ago, the purchase-money of Osterley Park would have been in my possession.

“ I remain, &c.

“ JAMES WILCOX.”

“ There,” exclaimed the major, “ what say you to that, Harry ; is it not in thorough keeping with the fellow’s conduct ? Not contented with having cajoled and defrauded me, he now adds insult to injury. As to the paltry three thousand pounds, Harry, I care not that about it,” cried the major, as he snapped his thumb and finger with convulsive vehemence ; “ the timely discovery of such villany would have been a bargain at ten times the sum. Cheer up, my boy ; partial evils generally hang on the skirts of great benefits ; and it would, indeed, be an act of ingratitude, under the present circumstances, to suffer a momentary regret to cast its shadows over the brilliant prospect which has been opened to us ; let us therefore return to the hotel, and arrange the plan for our future proceedings.”

The major, having accordingly received from the hands of Wigram all the papers and

securities which had been deposited with Wilcox, briskly stepped into a coach, and was shortly in his apartments at Holding's. The reader need scarcely be told that the principal topic of their earliest conversation was Miss Villers. The major cheerfully gave his sanction to the proposed union of his nephew with that lady, observing that he was happy in seizing the first opportunity to demonstrate, by his actions, the genuine sorrow he felt for the miseries he had so heedlessly occasioned; but no sooner did he learn that she had lately become possessed of a considerable fortune, than his countenance suddenly fell several degrees below zero, and he declared that, if any circumstance could obscure the sunshine in which he basked, it was the communication just made to him. "When poor, I rejected her," exclaimed he, "but now she has become wealthy, like a true man of the world, I eagerly adopt her as my niece: this is a bitter reflection, Harry, and I see no other way of reconciling it to my feelings, but by making a settlement upon you, so splendid as at once to negative any charge of self-interest; and this, under the blessing of God, will I do before I quit London. You shall have Osterley Park

as your residence, upon the condition that your old uncle is to share with you its rural delights for a few months in the year — hey, Harry, what say you to the proposal?”

“My dear and generous uncle,” cried Harry, as he threw himself at his feet, “you have ever been to me a father; need I then say that my happiness would be incomplete were you to deny me the delight of your society. As to my dearest Isabella, allow me in her name to reply to an observation you just made with respect to her recently acquired property; to suspect a person of attributing sordid motives to others is a direct charge upon the liberality of the person so suspected.”

“Well said, my Harry; upon my word, love and eloquence are twin children, and the poet has evinced the correctness of his taste by bestowing upon the bow of Apollo the same lip-like form which distinguishes that of Cupid.”

The major was necessarily detained in London for several days, in order to complete those arrangements and legal formalities, which the flight of Wilcox and the approaching marriage rendered essential. The reader cannot feel surprised at his having expressed a

wish that his nephew should remain with him during that interval: four or five days had accordingly elapsed after the return of Mr. Seymour, before the uncle and nephew again reached Overton; the latter instantly repaired to the lodge, but the major felt unequal to the meeting until he had recruited his spirits by a night's repose. On the following morning, however, the anxiously desired, yet dreaded interview with Miss Villers took place, and we shall once again call upon the imagination of the reader to conceive a scene which we feel ourselves incapable of describing.

The interview between Harry and the vicar we shall not dismiss so abruptly; for the reverend gentleman offered some observations upon the late events, which were so pertinent in themselves, and so replete with sound lessons of morality, that to pass them over without some notice, would be to withhold from the reader the benefit of those conclusions, at which the skilful observer of nature arrives by a comparison of the motives and consequences of human action.

“Mr. Beacham,” exclaimed the vicar, “most sincerely do I rejoice at this opportunity of shaking the hand of the long lost and lamented

nephew of Major Snapwell, a gentleman for whom I entertain feelings of the highest esteem and attachment. But how came you to assume the name of Richdale, and to preserve an incognito which has been the means of protracting the mental sufferings of your poor uncle?"

"Oh, my worthy sir, let me entreat you to drop all allusion to a circumstance, the impropriety of which I freely acknowledge, and most sincerely deplore; it was, indeed, a deception which I ought never to have practised."

"It is enough, young man, that you thus acknowledge the error," replied the vicar; "and henceforth learn that deception is never used but as the cloak of vice. Whenever a man is counselled to disguise the truth by falsehood, in word or deed, let such counsellor be suspected of an unworthy motive. Had you manfully resisted the plan so artfully proposed by Wilcox, think you that he could have so far accomplished the villany he meditated? What misery would have been averted from your worthy uncle!"

"Spare me, spare me," Mr. Twaddleton: "I cannot endure the reproaches I so justly deserve; nor can I ever forgive myself for



having fallen into a snare against which my rectitude should have defended me."

"What is all this?" exclaimed the major, who had overheard the latter sentence, and thence discovered the subject of the conversation; "there must be an end to all this preaching; Mr. Twaddleton, you surprise me!"

"I have performed my duty, sir, and shall be henceforth silent," replied the vicar.

"At all events, find some better subject for discussion; why do not you enlighten my nephew with an account of your antiquarian curiosities? Your old shoe, I beg your pardon, I mean your leathern money, your apostle spoons, and your rock basins. Why, bless the man, he stands there amidst a group of smiling faces, looking as sombre as an evergreen in May, when contrasted with the vernal foliage around it."

The oddity of this comparison, and the facetious manner in which it was expressed, excited the laughter of all present, and produced the effect which the major had intended. The countenance of the vicar alone retained its inflexible and stern composure.

"Major Snapwell," replied the antiquary,

“ have you yet to learn that ridicule is not the test of truth? Could Horace have ever supposed that the sentiment which he uttered with an air of levity would have been so unfairly used by Shaftesbury, I am well satisfied that he would sooner have committed his works to the flames than have given publicity to the passage.”

“ I never was less disposed for an argument than at the present moment,” observed the major; “ were you to produce the fragments of the vilest utensil as a precious relic from the temple of Jupiter, I would not dispute its authenticity. In truth and sincerity I can say, that the present is the happiest moment I ever experienced; I never knew the value of Harry until I lost him, and I never could appreciate the merits of Isabella until I found her. As I have no selfishness in my nature, I would gladly diffuse a portion of my happiness over the neighbourhood in which it is my intention to pass my future days; listen, therefore, to the plan which I have devised for carrying this into effect. I design to give a public entertainment, upon a scale of magnificence which has been rarely witnessed at a country seat.”

“ An entertainment,” muttered the vicar, whose countenance afforded any thing but encouragement to such a scheme.

“ Ay, vicar ; an entertainment which shall be conducted with every regard to ancient usage, and classical correctness,” said the major, as he cast a sly glance at Mr. Seymour.

The countenance of the vicar brightened ; and he begged his worthy friend to be more explicit, and to state the nature of his intended fête.

“ You already know that this boy of mine is shortly to conduct Miss Villers to the temple of Hymen ; and may heaven shed the dew of its blessing upon them !” ejaculated the major.

“ Amen !” exclaimed the vicar.

“ Well, sir, I would seize that happy occasion for giving a rural fete, in my park, to the inhabitants of Overton and its neighbourhood ; and, as there are no less than three events which I am anxious to celebrate, I propose that this same fête shall be continued through three successive days. On the first shall be commemorated the providential escape of my nephew from shipwreck ; on the second, his marriage ; and on the third, my purchase and occupation

of Osterley Park — what think you of my plan?”

“ Why, truly, it would admit of much appropriate pageantry; and the arrangement is, doubtless, countenanced by classical authority. Augustus triumphed three days, for the purpose of commemorating three great events; the first of which was the defeat of the Pannonians and Dalmatii; the second, the battle of Actium; and the third, the reduction of Egypt. In the face of such authority, it would certainly ill become me to offer any objection; although, as vicar of the parish, I cannot conscientiously close my eyes against the evils which might possibly arise from such protracted revelry. I would, therefore, with submission, propose that the three events to which you allude should be celebrated by three distinct festivals on one and the same day.”

The major saw plainly that the vicar might be made to approve of, or dissent from, any plan, by the dexterous use of classical authority; he therefore determined to use it as a talisman for the accomplishment of his purpose.

“ I like your proposition,” replied the major, “ but I greatly fear that you will not be able to

support it by any classical authority ; and remember, that every thing must be conducted in the strictest accordance with ancient usage."

" I respect your intention," answered the vicar, "and will immediately search the writings of Lipsius for a precedent ; an author who has collected fifteen laws of the Roman entertainments."

Mr. Seymour here interrupted the conversation by enquiring of the major the plan of those amusements which he proposed to provide.

" I will convert the elm meadow at Osterley Park into a fair," replied the major, " wherein every species of amusement shall be exhibited : I will engage that vagabond Punch, who, like a snail, travels about the country with his house at his back, to display his hereditary wit, and mimic drolleries ; tumblers, rope-dancers, conjurors, fire-eaters, and, in short, the whole merry train of Comus, shall be pressed into our service. After these exhibitions, the company may weave the mazy dance, for platforms shall be erected for their accommodation ; I will arrange orchestras for music, and ornamented tents for refreshments. The vicar," ob-



served the major, with an arch smile, “shall open the ball with the bride.”

“Had I numbered a few olympiads less, major, I might not have declined so flattering a distinction,” replied Mr. Twaddleton, evidently not displeased with the compliment.

“Find some classical authority for the measure; and let your age sanction the propriety of my proposal,” said the major.

“Your suggestion merits attention — I have it, major. Socrates learned to dance very late in life, and Cato, with all his severity of manners, disdained not, at the age of sixty, to practise it. I will, therefore, comply with your desire, and certainly lead the bride down the first dance.”

“The canal,” continued the major, “shall, for the first time, float the proud emblems of British glory on its glassy bosom; and when the shades of evening fall, my Lilliputian ships shall engage — such cannonading! such nautical evolutions!! Mr. Seymour.”

“How charming! how very delightful!” exclaimed Louisa and Fanny; “but pray, papa, do allow Tom to return from school to witness all these amusements.”

“Fear not,” said the major; “I shall make

that a condition ; and I trust your papa will not refuse the request."

"Certainly not," replied the father ; "I shall be anxious to seize so favourable an opportunity for explaining to my children the various tricks they will witness, and the machinery by which the numerous deceptions will be accomplished ; thus shall I convert that which, to the common eye, will appear as a scene of idle revelry, into a school of philosophy, and in accordance with my favourite plan, 'turn sport into science.'"

"Upon my word, Mr. Seymour, you are a perfect alchymist, and extract gold from every thing you touch ; you have already derived scientific information from the most miscellaneous and trifling amusements, and will, no doubt, upon this occasion, convert our very pies and puddings into instruments of instruction ; thus verifying the old adage, that 'there is reason in roasting of eggs,' " said the major.

"I perceive that the major is not aware of the philosophy which suggested that adage," observed the vicar.

"Nor am I," said Mr. Seymour, "and therefore pray enlighten us upon that point."

"You doubtless know that there is a little

air bag at the large end of every egg, called the *folliculus aeris*, and which, as we are told, is designed to furnish a supply of air to the growing chick; if, therefore, an egg be exposed to the temperature of hot embers, this air will be suddenly expanded, the shell burst, and its contents scattered into the ashes. To prevent such an occurrence, the careful housewife pricks the blunt end of the shell with a needle, so as to allow the expanded air to escape, and thus to prevent the accident I have just explained; from which it appears that there is reason, or philosophy, in roasting an egg."

"Capital, upon my word," exclaimed Mr. Seymour.

"Well, but papa, we have interrupted the major in his delightful description; he had not concluded the account of his proposed fête," said Louisa.

"Pray go on," cried Fanny; "let me see, where did you leave off? Oh, I remember, you were interrupted in a temporary tent, which I hope you intend to decorate with garlands."

"Leave all that to the vicar, young lady; he will, no doubt, display his classical taste in the emblematical appointments."

“ I shall terminate the festivities of the day by a grand display of fireworks ; the arrangements of which will necessarily fall under my own more immediate direction. The vicar,” added the major, “ will perhaps allow me to proclaim him as master of the revels ; for he is, as we all well know, deeply versed in ancient customs, and I am especially anxious that every department should be conducted with classical taste.”

“ I willingly accept the office,” said Mr. Twaddleton, with a gracious smile, “ since there is authority for my acquiescence. The Romans, in their entertainments, usually appointed a person whom they styled king, and held responsible upon such occasions. I accept it also, on a different ground ; that my presence may check the enthusiasm of the people, and restrain the hilarity of the evening within the boundary of rational decorum.”

“ If in the arrangement of your banquet, my assistance can prove of any service, command me,” said Mrs. Seymour.

“ Believe me sincere, my dear madam, when I say, that the kind manner in which you receive my plan, and offer to promote its execution,

affords me the highest gratification ; if I decline your services, it is only from a fear of usurping the sovereignty of our master of the ceremonies," replied the major.

"What! would you call upon me to marshal the dishes?" cried the horrified vicar.

"Ay; and to give directions too for their preparation; have I not declared that every part of my entertainment shall be strictly classical? and ought not each dish to convey some moral device, some allegorical design? Are we to feed like the beasts of the field, who seek to satisfy their stomachs, without any regard to the nourishment of their minds."

The knowledge which the reader must have already collected of Mr. Twaddleton's character will have satisfied him that, in every action of his life, he was more or less influenced by the spell of ancient authority; but we doubt whether he may not yet have to learn the extent to which the reverend gentleman carried this enthusiasm. We shall, accordingly, beg to state a few instances, which will serve to illustrate this circumstance. Be it known, then, that the very first act which announced the preferment of the Reverend Peter Twaddleton to the dignity of



vicar of Overton was not, as some might suppose, an increased compensation for the tithes; nor was it a rate levied for the repairs of his house; but the removal of the vane from the spire of the church, which, as it consisted of a simple cross piece of iron, seemed to the vicar's imagination, to be riggling about, without any consciousness of its ancient origin and dignity of descent. He therefore, at his own expence, replaced it by the figure of a cock, which he caused to be duly executed after an authentic model. It will be remembered that the crowing of the cock warned Peter; for which reason the monks first placed the figure of that bird on their churches, as an emblem to call the people to prayers; and, since the image was made to revolve with the wind, it soon acquired the name of a *weather-cock*. With respect to the arrangement of his table, he displayed an equal veneration for ancient forms. He perpetuated the use of the wassail bowl, which was scrupulously prepared with apples and ale, according to the most orthodox receipt. His mince-pies at Christmas were fabricated with the same inflexible adherence to ancient authority; he maintained that the introduction of meat into their composition was a scandalous

heresy ; that the choicest productions of the East ought alone to be admitted, since the custom was originally intended to allegorise the offerings made by the wise men who came from afar to worship, bringing *spices*, &c. He was also as critical with respect to the *shape*, as he was with regard to the *composition* of these dainty inventions ; he insisted upon the ancient or coffin shape, which he stated to have been in imitation of the cratch, or manger, wherein the infant Jesus had lain. His table was, with the same antiquarian correctness, punctually supplied at Easter with a gammon of bacon ; a custom which would, perhaps, have been more honoured in the breach than in the observance, since it was evidently founded on the abhorrence our forefathers thought proper to express towards the Jews, at the season of commemorating the resurrection.\* The idea was in direct opposition to the liberal sentiments of the vicar, but being an ancient custom he never ventured to question its propriety. In like manner, his tranquillity would have been sadly disturbed, had Annette ever forgotten the *pancakes* on Shrove-Tuesday ; for he was decidedly of

\* Drake's Shakspeare and his Times.

opinion that it was a dish which had derived its origin from the heathen Fornacalia, a festival instituted by Numa \*, in honour of the goddess Fornax ; and was intended to commemorate the making of bread before the invention of ovens. Upon the subject of cross-buns he displayed great profundity ; he observed, that the word *bun* was derived from *boun*, a species of sacred bread described by Hesychius, and which was anciently offered to the gods ; in support of which opinion he quoted Julius Pollux and Diogenes Laertius, with as much perseverance and effect as the modern vender cries hot cross-buns on Good Friday ; nor did he relinquish the subject, until he had ably descanted upon the address with which heathen customs had been, as it were, naturalised, and perpetuated as Christian observances. The *boun*, he would say, lost its idolatrous impurity by receiving the sign of the cross, in the same manner that Druidical idols, and *stones erect*, by having crosses cut upon them, continued to receive a justifiable reverence, even as late as the seventh century.

In short, the extent to which our excellent but eccentric vicar was carried, on such occa-

\* Ovid. Fast. 2. v. 525.

sions, can scarcely be credited, except by those who are acquainted with the extravagant whimses of a genuine antiquary. We have never contemplated this part of his character without congratulating the rising generation at Overton on the circumstance of the offices of village schoolmaster and vicar of the parish not having centred in the same individual; for we have not the shadow of a doubt, so great was his veneration for ancient usages, but he would have whipped up every child within his jurisdiction, on the morning of Childermas-day, or that of the Holy Innocents, as we are informed was the ancient custom, "in order that the memorial of Herod's murder of the Innocents might stick the closer."

We have thought it right to relate these few anecdotes, in order to vindicate the propriety of the major's election, and to convince the reader that a better qualified master of the ceremonies could not possibly have been provided. Having, therefore, payed this homage to the judgment of the major, and to the antiquarian lore of the vicar, we shall return to the party, whom we had rather abruptly quitted, and continue our relation of the conversation which followed.

“ So then, you have determined that the vicar shall superintend the banquet,” said Mrs. Seymour. “ There is, however, one part of the ceremony which I shall certainly not feel disposed to resign into his hands, the ordering and disposition of the bridal cakes; the genius of Gunter shall be invoked to produce one of the most triumphant specimens of his art.”

“ Psha, nonsense; you surely would not countenance that ice-clad mountain, through whose dark regions the demon of indigestion holds undisputed sway. Its snows, my dear madam, are treacherous signals, which lure the eye by the semblance of purity, and serve to conceal the hostile weapons which it conveys for the destruction of mankind. Depend upon it, that I shall resist its introduction at our festive board with no less warmth, than that with which the priest of Apollo opposed the admission of the wooden horse within the walls of Troy.”

“ Why, zounds, vicar, do you expect me to submit to such vagaries?—a wedding without a cake!—it cannot be tolerated,” vociferated the major.

“ You shall, doubtless, have your cake; but let it be the true Roman bride-cake, made after



the receipt which Cato has given in his work, *De Re Rustica*, chapter 121. You must be aware, Mr. Seymour, that the *mustacea* of the Romans, the species of cake used at weddings, consisted of meal, aniseed, cummin, and several other aromatic ingredients."

"And do you seriously believe that any of us will swallow such a medicated farrago?" said the major.

"The unenlightened may, perhaps, refuse it; and should the children prefer your modern combination, they might stand excused, since classical inspiration rarely descends upon a boy, until he has construed a Greek chorus," observed the vicar.

"Were I to swallow a grain of it," said Mrs. Seymour, "I verily believe I should be ill for a week."

"Mere prejudice, madam; the object of the *mustacea* was actually to remove or prevent the indigestion which might be occasioned by eating too copiously at the marriage entertainment; and it must, I think, be acknowledged that the compound was better adapted for such a purpose than the modern bride-cake, to which it gave origin."

“ Suppose we compromise the matter by giving directions for each kind,” said Mr. Seymour : “ the vicar shall provide a certain number of ‘ mustacea,’ and Gunter shall prepare an adequate quantity of his cake ; and I am willing that the merit of the question shall be decided by the suffrages of the guests.”

“ That is a very happy mode of settling the dispute,” observed the major.

“ Having then disposed of so momentous a question to the satisfaction of all parties, I would beg to enquire to whom the selection and arrangement of the comic entertainments are to be entrusted. Unless the major should have already found a competent person, I think I can recommend to his notice an individual who is eminently qualified for the duties,” said Mr. Seymour.

“ I am, at this moment, in quest of such a director,” said the major.

“ Ned Hopkins, then, who has for some time past taken up his abode at our village alehouse, is the very person, of all others, whom you seek. I have no doubt, that for a trifling consideration he will undertake the office ; and I feel equally

confident that he will execute its duties to your satisfaction."

"Ned Hopkins!" exclaimed the vicar, with some surprise.

"To be sure; and who better understands the trim of those itinerant sons of Comus? Was not his father a mountebank doctor, and a professor of the art of legerdemain?"

"I value not Ned Hopkins the less on that account; the immortal Virgil was the son of a servant, or assistant, to a wandering astrologer, or 'Medicus Magus,' as Juvenal has it. But my dislike to Ned Hopkins is founded upon his own dissipated habits, his total disregard of all decorum, his disgusting jokes —"

"Ay," continued Mr. Seymour, "and his bad puns, vile quotations, and hackneyed proverbs."

"Upon my word, gentlemen, this must needs be a very amusing fellow, if only one half of the offences charged against him be true; and you have so far excited my curiosity, as to make me desirous of hearing something farther of his history and habits," said the major.

"He is one of those loose spirits," replied Mr. Seymour, "who live upon expedients;

and derive a revenue from sources, of which those who jog on quietly through the beaten paths of life have not the most remote conception. He commenced his career under the tutelage of the first fire-eater of the day, but having clumsily scalded his mouth, he lost his reputation, and found it advisable to seek some other stage for the display of his abilities. Possessed of a very considerable degree of native humour and caustic shrewdness, he engaged himself as a ‘mercenary,’ or literary drudge, to a popular publisher of comic song books, sanguinary murders, magical magazines, oracles of health, and plans for the liquidation of the national debt; which occupations have, as I have been credibly informed, produced for him during a successful season, some twenty or thirty pounds in the lawful coin of the realm: but Ned, like many a great genius, was better pleased with an hour of idleness than a week of study; and, strange to say, would at any time have preferred a cup of wine to a bucketful of the finest water from Helicon; no sooner, therefore, had he collected a few pounds, than he descended from his high literary station a lofty garret; and, taking up his abode at some hedge alehouse,

would enjoy a life of happy leisure, until his substance had wholly evaporated in the form of tobacco fumes. For some months past," added Mr. Seymour, "he has been a constant resident at the Bag of Nails, where, as I am led to believe, he pays for nothing but his tobacco; the worthy hostess having found him a very profitable bait for customers, is too willing to barter the drippings of the kitchen for his wit, and the leakage of the tap-room for his songs."

"I am very curious to become acquainted with this strange being," said the major.

"Suppose we walk into the village," said Mr. Seymour; "we shall be certain of finding him smoking his pipe on a bench before the alehouse door; where he is as regularly stationed by his patroness, as the saucer of treacle is placed in the window of a pastry-cook to attract the flies."

"You will excuse my accompanying you," cried Mr. Twaddleton; "I cannot stand his gross jokes, and bad grammar."

"And his Latin, vicar! is it not inspiring?"

"What! and does the fellow talk Latin too? Upon my word, the interest which his cha-



racter excites gathers fast upon me," said the major.

"Under ordinary circumstances, he modestly confines himself to his own native tongue; but when animated in argument, he assails his adversary with such a torrent of Latin phrases, as effectually to silence all common disputants," replied Mr. Seymour.

"He may, then, be compared to those sovereign princes, who in times of peace employ only native troops in their service, but who, the moment that war is declared, enlist a horde of foreign mercenaries into their pay. But let us proceed to the village," said the major.

The gentlemen accordingly directed their route through Forest Lane, and took leave of the vicar at the entrance of the churchyard. On arriving within twenty yards of the public-house, Mr. Seymour noticed a column of smoke which curled in wreaths about its porch. "There sits Ned," cried he; "I knew we should find him at his post."

"Is it a man of flesh and blood, or of straw, that I see," exclaimed the major; "it looks for all the world like a scarecrow just eloped from a corn field!"

If the major had entertained any doubts upon this subject, they were speedily dissipated, for Ned Hopkins had no sooner noticed the approach of the gentlemen, than he advanced to meet them.

“Hopkins ! Hopkins !” cried Mr. Seymour, “I fear you have not taken the worthy vicar’s advice.”

“An old dog cannot alter its way of barking, sir ; nor is it easy to straight in the oak the crook that grew in the sapling.”

“I am to presume, then, to speak courteously, that you are still ‘a man of leisure.’”

“Ay, verily am I ; as idle, sir, as a chimney in the dog-days,” replied the wag of the tap-room.

“That, by the by, is not a very happy simile of yours, when applied to a man who is *smoking* all day long,” observed Mr. Seymour.

“I admit it,” said Ned, “so here’s another for you, — as lazy as Ludlam’s dog, that leaned his head against the wall to bark. But, after all, Mr. Seymour, a day of leisure is to me a golden age, and I am of my Lord Peterborough’s way of thinking, who used to say, ‘a golden age was that in which every one might *pipe* when and where he pleased.’”

The wag, at this instant, gave such a practical illustration of his theme, as would have suffocated the major, had not his military habits rendered him smoke proof.

“ In short, gentlemen,” continued Ned, “ a pipe is the delight of my life ; and I verily believe that, if I could not obtain the ‘ furies frankincense,’ as they have been pleased to call tobacco, I should be like Vicar Breedon, who, according to William Lilly, cut the bell-ropes and smoked them.” So saying, he gave another puff, and then removing the pipe from his mouth, sang the following ditty : —

“ Little tube of magic power,  
Charmer of an idle hour,  
Object of my warm desire,  
Lip of wax, and eye of fire ;  
And thy snowy taper waist,  
With my finger gently braced.”  
    &c. &c.

“ Always merry, Ned,” cried Mr. Seymour.

“ Lord bless you, sir, what is life but a jest ? I jest to live, and I live but to jest. And so I shall continue to do, until I am put to bed by the shovel.”

“ Your father was a reputed jester, was he not ? ” asked Mr. Seymour.

“ He was. God bless his memory ! and it was his constant prayer that his son Neddy might turn out as sharp a man as his father ; and if there be any truth in the adage that ‘ dogs bark as they are bred,’ I certainly had as good a chance of success as most people. Momus rocked my cradle. I eat fire before I was seven years old ; and so anxiously did my father superintend my education, that he never suffered me to cut a morsel, until I had cut a joke. ‘ Neddy,’ said he, ‘ I perceive you are like my bagpipes, never audible except your pouch is full of wind ; for after a good meal you are as mum as a mouse in a mill ; so remember, my lad, no joke no pudding.’ Thus schooled, I became, through necessity, a wit, and earned every mouthful by a pun ; in short, after a little time, my genius illumined every dish, and, like the fire of London, blazed from Pudding Lane to Pie Corner.”

“ And you afterwards appeared on the stage, as a candidate for popular applause, which you were fortunate enough to obtain ; how came you to desert your calling ?” said the major.

“ He who licks honey from thorns pays too

dearly for it," replied the wit. "No one, but him who has made the experiment, can tell how bitter it is to laugh with the heartache; so, in a moment of disgust, I washed the paint off my face, packed my wardrobe into a pocket-handkerchief, and bid adieu to my brethren of the comic mask, who, upon that occasion, looked at me, for all the world, as if they had been fed upon Tewksbury mustard."

"The rogue, do you observe, says nothing about the scalding he received," whispered Mr. Seymour.

"And what was your object?" asked the major.

"To carry my wit to a better market; and instead of retailing it at country fairs, to offer it wholesale to some of the great London publishers; from whom I immediately received considerable orders. The profit which rewarded my poetry soon convinced me, notwithstanding all that had been said to the contrary, that there were still some gold mines in Parnassus. I lived for the first week on liquid blacking; and have, ever since, hailed it, as the stream upon which I first launched my little bark, with all the grateful feelings of early associations. I well re-



member it was winter, and although I contrived by my eulogies of the jet polish, to obtain a diurnal meal from a neighbouring chop-house, I was compelled to sit in my chamber at night without fire or candle, until the publication of my song ‘*Ah, let my muse a flame inspire*’ lighted a cheerful blaze in my grate, and enabled me to purchase three pounds of rush-lights. In short, gentlemen, without exhausting your patience with a long recital of my adventures, suffice it to say, that what with writing puff advertisements, composing and adapting ballads, and sundry other literary occupations, I soon found my hands full, and have been enabled ever since to ensure fidler’s fare — meat, drink, and money.”

“ Well, Ned ; what say you to a profitable engagement ? ” asked Mr. Seymour.

“ Why, as to that, sir, I have always a ready mouth for a ripe cherry.”

“ You must know then, that my friend, Major Snapwell, proposes to give a grand rural fête to the inhabitants of Overton ; and, as he intends to convert his grounds into a fair upon the occasion, he is desirous of finding some person acquainted with comic entertainments, who

would undertake the office of manager, to contract with the necessary performers, and superintend all the arrangements."

"I am the lad for the major's silver," said the delighted wag; "for, without vanity, I may say that few persons better understand the art of mixing up the motley ingredient of fun and frolic, so as to produce a dish suitable to every palate."

Major Snapwell, with the assistance of Mr. Seymour, now entered more fully into the nature and extent of the exhibitions which he wished Hopkins to provide; but as he was, at present, unable to fix the exact period for the fête, he directed him to take such steps only, as might be necessary for estimating the probable expense of the diversions; and to hold himself in readiness for active service.

The gentlemen were just upon the point of quitting the porch, in which the above conversation had taken place, when Miss Kitty Ryland unexpectedly presented herself before them. The truth was, that being extremely curious to discover the object of so long an interview, she had eagerly watched the movements of the party: but she was doomed to suffer mortifica-

tions, for notwithstanding the pains she had taken to catch the subject of the conversation, a few straggling words only reached her ears, and those were rather calculated to raise, than to satisfy her doubts.

“Your most obedient, Major Snapwell,” said the smiling spinster, as she dropped a gracious courtesy. “It is, really, a long time since I had the pleasure of addressing you. I hope you are well pleased with the neighbourhood of Overton. You have doubtless heard, Mr. Seymour,” continued the lady, “of the flight of that mysterious stranger of the name of Richdale. I always predicted it. I knew how it would turn out. Have I not said, a thousand times, that this mysterious conduct was assumed for some vile purpose?”

“And pray, madam, what has transpired respecting that young man?” asked Mr. Seymour, with an ill suppressed smile.

“Transpired! — is it possible, then, you should not have heard that he has been removed to London on suspicion of forgery.”

The major could bear this no longer. Mr. Seymour winked, hemmed, pulled the gallant major’s coat, and even went so far as to salute

his shin with the toe of his shoe : but it was all in vain ; the major was inaccessible to every hint.

“ You are, doubtless, madam, well acquainted with Mr. Richdale and his concerns,” angrily exclaimed the military veteran ; “ but those who condescend to pry into private letters, ought not to boast of the information so scandalously obtained : the man who rifles your purse, and then negotiates the private bills it may contain, is both a knave and a fool ; but, in the present case, no one has been injured but yourself, your sagacity has been the dupe of your own curiosity.”

Ned Hopkins, during this conversation, was with hurried steps parading before the door of the public-house, alternately muttering, and puffing the smoke from his lips.

“ Malice shoots at others, — (*whiff*) — and wounds herself — (*whiff* — *whiff*) — ”

“ But, madam,” continued the major, “ let us hear the charge which you thus dare to insinuate against my nephew.”

“ Your nephew !!! ”

“ Ay, madam, against my nephew, your *friend*, Mr. Harry Beacham ; for such is the

person who, for reasons into which you have no right to enquire, thought proper to assume the name of Richdale."

"That's a clinker," muttered Ned, "as the man said, who drove a nail into the moon —" (*whiff—whiff.*)

Miss Kitty turned pale, for she found herself entangled in a web of falsehoods; but she uttered not a word, and the major continued —

"The respect, which I must ever feel for the female sex, forbids my giving expression to the contempt which such conduct excites; go hence, madam, and remember that curiosity is the egg from which all female vices are hatched — go hence and mend your ways."

"She'll mend no doubt — (*whiff*) — like sour beer in summer," muttered Hopkins — (*whiff.*)

We have undoubtedly heard that a whole barrel of ale has been instantaneously soured by a flash of lightning; be this as it may, we can positively assert that, upon the present occasion, the spirits of Miss Kitty were thrown into a state of acetous fermentation by a single flash from the major's eye.

"Major Snapwell," ejaculated the enraged spinster, "I do not think that a rude and un-



feeling attack upon a poor defenceless female will add to your laurels. As for you, Mr. Seymour, what excuse can be urged? the major is evidently some cockney linen-draper, in the regimentals of a volunteer, and his conduct may find an apology in the lowness of his birth; but that you should witness so wanton an attack upon my feelings, without standing forward as the protector of insulted innocence, is a circumstance which can neither be palliated nor forgiven."

"The lady is like her own tea," said Hopkins, "weak but hot — (*whiff*) — but experience, gentlemen, has taught me," continued the wag, "that a person always becomes violent, in proportion to the weakness of his argument, like my worthy hostess, who disguises the want of spirit in her punch, by serving it up scalding hot — (*whiff* — *whiff*)."

"Miss Kitty may certainly be said to boil at a low temperature," observed the major.

"Don't you know the proverb?" cried Ned, "a little pot is soon hot" — (*whiff*).

"I give you credit for that remark," said Mr. Seymour; "had the vicar been present," continued he, addressing himself to the major, "I am sure he would have confessed it not a



Inn. His affairs have been put into my hands ; and as I find your name connected with sundry annuity transactions, I think it right to inform you that the money with which you entrusted him has never been paid to the respective parties ; indeed, as the whole scheme would have been illegal and usurious, it is scarcely to be regretted that the distresses of your solicitor should have diverted it into a different channel.

“ I have the honour to remain,

“ your most obedient,

“ and very humble servant,

“ TIMOTHY CRAKENHORN.”

Thus, in one single moment, did Miss Ryland find her income, already barely sufficient, reduced to one-third of its amount. Miss Noddleton and Miss Puttle were equal sufferers, for by the advice of the aforesaid spinster, they had been induced to invest a considerable part of their property in the same tempting securities.

If the reader has not already discovered the fact, he is now to be informed that X. Z., the gentleman with whom Miss Ryland had so singular an interview in Bond Street, was no

other than the wily Wilcox. A dark and portentous cloud had been long gathering over the head of that infamous limb of the law ; he had embezzled the property of his employers, to a considerable amount ; and he well knew, should even his plans with respect to Major Snapwell succeed, that his other frauds must, sooner or later, involve him in utter ruin ; he therefore determined, by an ingenious system of plunder, to collect together a large sum of money, with which he might, at any moment, escape from England, and thus securely place himself beyond the reach of the law. In furtherance of such a plan, he inserted various advertisements in the newspapers, so worded as to excite the particular attention of that class of the community whom he knew he could most easily cajole. The manner in which Miss Ryland fell into this snare has been already related ; and we are sorry to add that, through her representations, the Misses Noodleton, Puttle, and Tapps, were easily induced to commit a similar act of indiscretion.

Mr. Seymour and the major, after their interview with Ned Hopkins, returned to the lodge, where they learned that letters had

been received from Lady Cremore, and Mr. Charles Digby, the trustee of Miss Villers, in which they expressed, in the strongest terms, the satisfaction they felt at the proposed marriage, and announced their intention of visiting Overton in the course of a few days.



## CHAP. IX.

A SHORT BUT INTERESTING CHAPTER, FROM WHICH THE READER MAY LEARN THAT THE MOST IMPORTANT EVENTS ARE NOT THOSE WHICH ABSORB THE GREATEST PORTION OF TIME IN THEIR RECITAL. — CONCLUSION OF THE SECOND VOLUME.

THE interval, from the conclusion of the last to the opening of the present chapter, has advanced our history nearly three weeks, and afforded ample time for those preliminary arrangements, and legal formalities, which, however indispensable they may be on such occasions, cannot be supposed to furnish much interest to the reader. Lady Cremore and Mr. Charles Digby had been, for some time, on a visit at the lodge, and had complied with all those technicalities which the nature of their trust required. Nothing, therefore remained, but to appoint the day, on which Isabella Villers should bestow her faithful hand upon the happy and devoted Harry Beacham.

It was finally agreed, that the ceremony should be performed in Overton church by the vicar; and as the happy couple expressed a wish to pass their 'honey-moon' in a retired part of Yorkshire, the major consented to postpone his intended fête, until after their return; nor was he displeased with such an arrangement, as it afforded time for getting up his entertainment on a more liberal scale than could otherwise have been accomplished.

The reader will readily imagine the joy which beamed in every countenance as the major finally appointed the nuptial day; and it so happened that the vicar entered the library, in which the party had assembled, at the propitious moment to which we have just alluded; acquainted as the reader must be with the character of that amiable person, he need not be told how liberally he participated in the general joy and satisfaction. He embraced his old friend Mr. Seymour, shook the honest major cordially with both hands, and then, wiping away the tears that trickled down his cheeks, fell upon his knee, and carried the fair hand of Isabella to his lips.

After the pause of a few seconds, the vicar

recovered his self-possession, and informed his friends that, notwithstanding all his remonstrances, he found that his faithful housekeeper had determined to marry the major's valet; "and since," said he, "this is inevitable, I have reluctantly promised to perform the ceremony; '*connubio jungam stabili*,' as Virgil has it."

"It is quite settled," said the major, "so let them by all means marry; and I will promise that you shall not be deprived of Annette's services; I well knew what were the kind intentions of Miss Kitty Ryland, and I have taken measures to frustrate them."

"Poor Miss Kitty! most sincerely do I feel for her," exclaimed the vicar.

"What, then, you have heard of her interview with the major, I suppose," said Mr. Seymour. "Upon my word, it was a smart skirmish, and I can assure you that the good lady suffered not a little, '*majore sub hoste*,' as Virgil has it."

"Let me tell you, my dear Mr. Seymour, that the ruin of four helpless women is but a sorry subject for pleasantry."

"Miss Kitty ruined! — and Miss Noodleton! — Psha! you are jesting, vicar," exclaimed Mr. Seymour.

“ My lecture was calculated to save, not to ruin her,” observed the major.

“ But ruined she is ; and by that vulture Wilcox, who artfully contrived to get the bulk of her property within his talons ; and I am sorry to say that the same fate has befallen her maiden companions.” The vicar then related the history of the transaction with which the reader has already been made acquainted.

“ I am truly grieved at your statement,” said the major ; “ never, since the days of our grandmother Eve, has female curiosity been so severely visited.”

The mighty magician of the north has compared the course of a narrative to the progress of a stone, rolled down hill by an idle truant boy, “ which at first moveth slowly, avoiding by inflection every obstacle of the least importance ; but when it has attained its full impulse, and draws near the conclusion of its career, it smokes and thunders down, taking a rood at every spring, clearing hedge and ditch like a Yorkshire huntsman, and becoming most furiously rapid in its course when it is nearest to being consigned to rest for ever ; even such,” says he, “ is the course of a narrative ; the

earlier events are studiously dwelt upon ; but when the story draws near its close, we hurry over the circumstances, however important, which your imagination must have forestalled, and leave you to suppose those things which it would be abusing your patience to relate at length."

Let the reader of the present work accept this explanation, as an apology for the abrupt and rapid manner in which we shall now accelerate our narrative. We might, certainly, have amused him with an account of the visit which Miss Villers, with Mr. Beecham and the Seymours, paid to the vicar, for the purpose of inspecting his antiquities ; we might also have agreeably entertained him with a second interview between Ned Hopkins and the major, when the arrangements for the comic exhibitions were finally settled ; but as we consider the characters of these respective personages to have been already sufficiently developed, instead of fatiguing him with any additional descriptions, we shall avail ourselves of that peculiar Lethean property which has been often ascribed to the pen of an author, and commit him to the arms of Morpheus, where it is our intention that he



shall remain until the morning of the wedding-day.

\*            \*            \*            \*            \*            \*

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Reader, awake ! the sun has risen, and Nature appears anxious to robe herself in her most gorgeous apparel for the approaching ceremony ; the family of the lodge have been already roused from their slumbers by the attendance of minstrels, whom the vicar had directed to salute the bridal party at break of day : — but, hark ! while we are thus talking, the village of Overton is in a bustle ; the marriage ceremony is over ; the bells of the church are ringing right merrily their festive peals ; many a handkerchief is waving from the cottage windows, while their doors are hung with garlands ; the vicarage is ornamented with fragments of Venetian tapestry ; the peasants, dressed in their holiday garments, are carrying nosegays in their hands, to present to the bride as an offering of their respect, or to strew in her path, as an emblematic expression of their wishes.

The party having reached the lodge, we were proceeding to describe the banquet, which had been decorated with devices and emblems, under

the classical direction of the vicar, when our publishers, like harpies, unexpectedly pounced upon us, and warned us from the feast — ‘*diripiuntque dapes.*’”

“ You have already exceeded the prescribed limits of the volume — you must close the scene,” said they. We remonstrate, but in vain. We request but a few pages, in order that we may give our characters a dramatic exit; but they reply to us in the words of Sneer, in the Critic, “ O never mind; so as you get them off the stage, I’ll answer for it the *reader* wo’n’t care how.”

You see, then, gentle reader, how vain it would be to contend against such arbitrary and tasteless masters; we shall, therefore, without any apology, ring the manager’s bell, and drop the curtain.

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